

American Aviation

MAY 28,
1951

35c

THE
INDUSTRY'S
FIRST
NEWS
MAGAZINE

Industry in the Air

SOME of the scheduled airlines have tended to look with misgivings toward the steady increase in airplanes operated by industrial corporations. Nothing has been said outright, so far as we know, but the impression has been fairly widespread that the airlines considered the increase in corporation aircraft fleets as unwelcome competition.

W. W. P.

We think such a feeling, if it exists at all in any real sense, is unwarranted. If there is any real competitive angle, it is in the competition for priority in approach patterns at high-density volume airports where airliners are being held up for itinerant, local, and military traffic.

The use of airplanes by industrial corporations is a healthy sign for the entire aviation business and the Corporation Aircraft Owners Association has made out a good case, it seems to us, that the increased use of industrial airplanes has resulted in an even greater use of scheduled airlines by industrial firms.

A recent survey by CAO A revealed the existence of almost 1,400 multi-engined airplanes owned and operated by private companies, and over 6,000 single-engined airplanes of a gross weight of 2,500 pounds and larger. Over 800 known companies own and operate multi-engined equipment. These are impressive figures.

An enlightening panel discussion on the advantages of corporation-owned aircraft was a feature of the fourth annual Wisconsin Aeronautics Conference at Wausau recently. Conducted by Cole H. Morrow, the alert chairman of CAO A's technical committee, the panel discussion brought out some pertinent information on how, when and why companies own and operate their own planes.

For one thing, most companies are cost conscious. They are keeping detailed records of operating costs and relatively few industrial airplanes fly outside of certain specified industrial or trade areas. On long trips the airlines get the business. When and business conditions become poor, cost-conscious companies may utilize their own airplanes sparingly and use the airlines more.

For another thing, most industrial companies want to reach places in a hurry that aren't served by scheduled airlines. Or they need to hop and skip around an area not blanketed by frequent airline service. There are a multitude of advantages to com-

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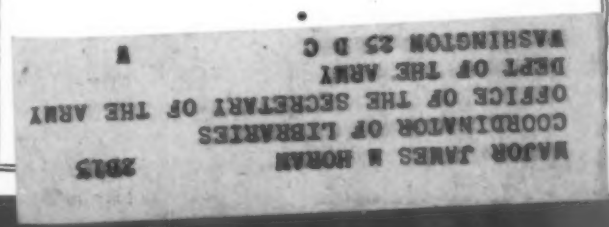


President of Airport Executives

Walter E. Betsworth, manager of Waterloo (Ia.) Municipal Airport, was elected president of the American Association of Airport Executives at the group's recent meeting in Minneapolis. He has been manager at Waterloo since July 1, 1948, and before that had served eight years as manager of the Sioux City Municipal Airport. Appointed to CAA's Airports Advisory Committee in 1949, he was re-elected last fall and is vice chairman of the group. He also is president of the Iowa Chapter of the AAAE.

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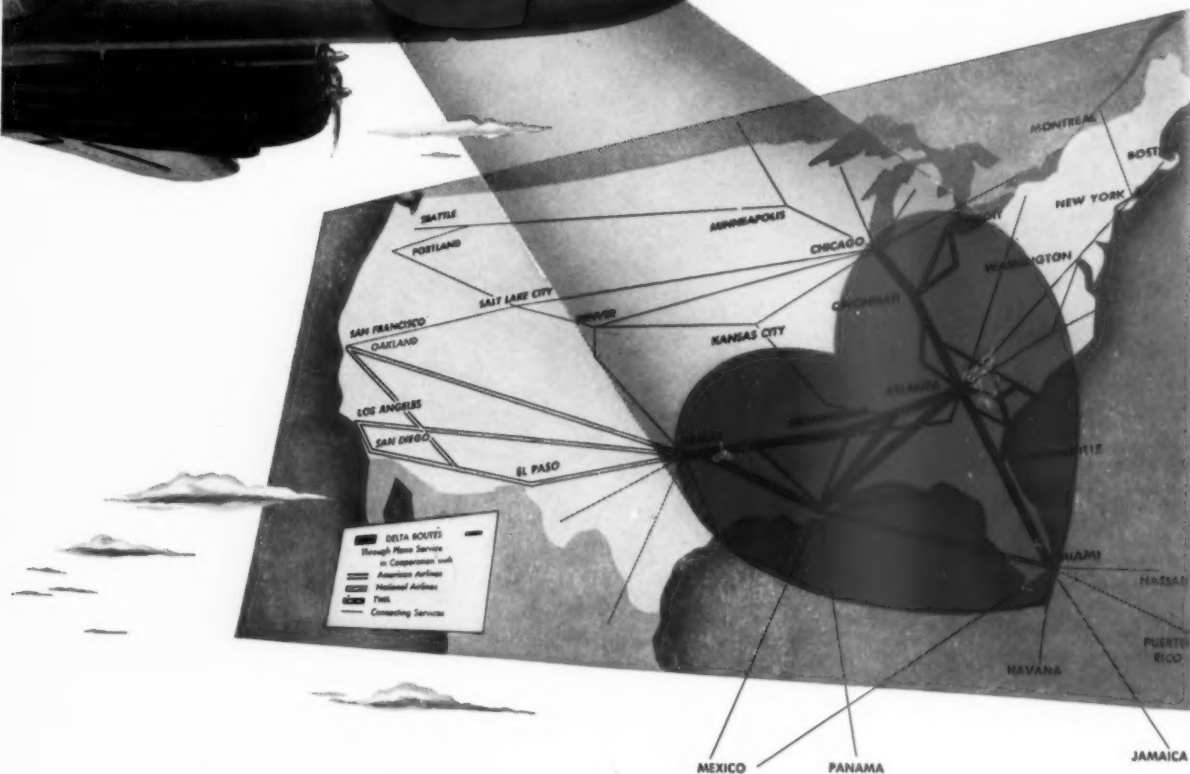
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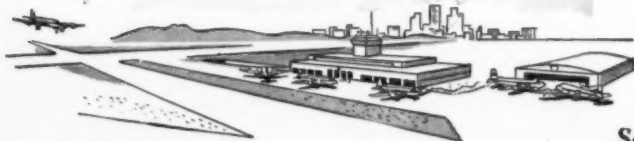
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American Aviation

Volume 14 Number 45

THE INDUSTRY'S FIRST NEWS MAGAZINE

NEWS SECTION

May 28, 1957

a LOOK at the WEEK

Manufacturing industry is still trying to get commercial transports moved from Controlled Materials Plan "B" list to "A" list and to have personal planes included for priorities assistance. Situation boils down to this: everyone favors the move except National Production Authority, which has the say-so.

Deal under which Helioplane would be produced by Aeronca Manufacturing Corp. under contract with Helio Aircraft Corp. isn't dead. Agreement still stands although nothing's happened yet. It's probable that commercial efforts will be diverted to military adaptation. Aeronca's ready to build military or commercial version, although latter would be complicated by materials, higher prices, etc.

Present outlook is for supplemental fiscal 1952 defense appropriation request next January.

Although extensive sub-contracting complicates filing of forms, aircraft manufacturers expects to meet May 30 deadline for submission of third-quarter materials requirements under Controlled Materials Plan.

Bureau of Budget sources indicate prototype aircraft testing funds will have rough going despite previous Congressional authorization for such expenditures. Result may be a reduction in proposed fiscal 1952 program.

Machine tool production in third quarter will be up 30%. NPA has given manufacturers clearance on steel, copper and aluminum and has promised to help them find supplies.

Very disturbing to airlines are reserve calls received by CAA air traffic control employees. Large number was taken from one center, resulting in some traffic disruptions. More are scheduled to go from other locations. About one-third of CAA's traffic control personnel are eligible for recall by active and inactive reserve.

Airlines are now experiencing considerable trouble in securing new co-pilot material. Usual sources are dried up; potential co-pilots are in military service.

Lack of steel is delaying completion of new buildings at several large airports. CAA is expected to discuss situation with NPA and military.

NACA Discloses Transonic Wind Tunnels

First successful operation of two large transonic wind tunnels, plus other smaller ones, and the extent and scope of its pilotless aircraft test division at Wallops Island, Va., have been disclosed by National Advisory Committee for Aeronautics.

Development of the wind tunnels, operating in Mach .95 to 1.2 range, was accomplished by modification of existing wind tunnels at Langley Aeronautical Laboratory in a manner not disclosed by NACA.

Will Speed Work: The new tunnels will permit greatly accelerated work on the troublesome aerodynamic problems which have long been associated with the sonic barrier, and will also speed propeller development work for turbine propeller engines.

Actually, NACA has been successfully penetrating some of the blind spots created by inability of regular wing tunnels to provide usable air flow conditions in the transonic range by use of rocket and ramjet-powered pilotless aircraft models and by use of free-falling model drops from high altitudes.

Specifications: In six-year history of Wallops Island test base, about 1,500 models have been flown. They range in size from six to 10 feet, in weight from 70 to 250 lbs., in speed from 1,000 to 3,000-mph.

In 10-15 second operating life of models, which incorporate experimental airfoil designs, they soar to 100,000-150,000 ft. altitude and 15-20 miles out to sea, telemetering back to ground recording equipment the details on operating characteristics sought by NACA engineers. In past 18 months, about 90% of all data being sought was successfully obtained, NACA officials said.

UAL to Make Fog-Dispelling Tests

Latest effort to lick the fog problem at airports is underway. It may or may not prove successful, but high cost of having airports fog-bound makes every experiment worthwhile.

United Air Lines is taking a C-47 Cargoliner off the line, fitting it up with seeding apparatus, and will test new chemicals and procedures (under contract) worked out by H. M. Brandau and E. K. Kooser, owners of Weather Control Inc., Medford, Ore.

Improved B-K System: In 1948, Brandau and Kooser staged some fog dispersal tests for Air Transport Association. Results on cumulus clouds were okay, on stratus clouds disappointing. (Fog is nothing more than a low-flying cloud; the present approach to fog dispersal is a controlled type of rainmaking, i.e., seeding with chemicals). So the two men went back to work, came up with a new B-K System which shows considerable promise. At least it's promising enough that UAL is going to conduct extensive tests with a C-47.

Brandau and Kooser won't say what the new chemicals are other than that they are very inexpensive (about 50c per runway) and that they can be obtained in almost any store.

Cessna Fitted for Boundary Layer Control

A personal type aircraft, the Cessna 190, has been outfitted with boundary layer control equipment and is nearly ready to undergo initial flight tests, National Advisory Committee for Aeronautics has revealed.

Boundary layer control, the source of considerable industry interest for many years, has not proved practical

in the past because of mechanical complications which it introduces. In operation, BLC equipment draws air from the critical area immediately above the wing in such a way that wing drag is reduced and wing lift increased. Three-fold increases in disposable loads and about a 15% increase in range have previously been predicted for successful BLC installations in transport-type aircraft.

GE Supercharger: Heart of NACA's boundary layer control equipment is a General Electric supercharger, used as an air pump, which is mounted in the Cessna's cabin and powered by a gasoline engine. Air for engine's operation is drawn from two inlet air scoops located in wing roots adjacent to fuselage.

Suction generated by pumping system is applied to wing's leading edge through porous metal wing covering which extends over entire leading edge and back about 10% of the chord on top side of the wing. Air drawn through this skin is ducted through supercharger housing and exhausted overboard via ducting which terminates in top of fuselage aft of wing.

IATA Postpones Tourist Service

Postponement of Atlantic tourist service until late 1952 and a \$20 increase in regular fares this fall were agreed upon by ad hoc North Atlantic committee at International Air Transport Association traffic conference meetings in Bermuda. Final conference action was expected as this issue went to press.

Immediate establishment of tourist service, advocated by Pan American World Airways and also favored by Civil Aeronautics Board, failed to gain support from other Atlantic operators who felt such flights couldn't be flown profitably with present equipment and that a lot of traffic would be diverted from regular trips. PAA apparently won its point for future, however, with service set for Oct. 1, 1952.

Fare agreements included:

Regular Fare: New York-London basic one-way fare increased \$20 to \$395, effective Oct. 1, 1951, through Sept. 30, 1952, with six month's escape clause.

Off-Season: Fare of one and one-third basic (east-bound, Oct. 1-Mar. 31; westbound, Dec. 1-June 30.)

Special Fare: 17-day special round-trip at one and one-tenth basic, effective Jan. 1-Mar. 31.

Tourist: Experimental service to be introduced Oct. 1, 1952, at rate of \$250 maximum, \$225 minimum, exact rate depending on cost studies (PAA and CAB favored \$225).

Operators' Committee: Recommendation made that North Atlantic Operators' Committee be formed for "studying, developing and administering the experimental and long-range phases of the tourist class project." Group would meet about Oct. 15, 1951, and not less than once every six months thereafter, to keep under review technical and economic aspects of the project.

MANUFACTURERS

Manufacturers' Inspections: Despite a CAA ruling which becomes effective the end of May that manufacturers may apply for permission to inspect their own aircraft for compliance with type certificate and production certificate, no plane maker has yet done so. Beech and Piper are understood to have indicated that they may wish to do their own inspection when the ruling becomes effective.

GE Parts Plant: Louisville, Ky., has been picked as the site for General Electric's new \$14,000,000 jet engine parts plant. When the factory gets into full production, more than 16,000 will be on the payroll.

Willys Gear for C-119: Willys-Overland Motors has signed more than \$3,000,000 in contracts to produce

landing gear for the Fairchild C-119, which Kaiser-Frazer will build at the Willow Run plant. About 430,000 square feet of plant space will be used for landing gear production.

Electronics School: Bendix has opened its eight-week school for electronics, an industry-sponsored school to train USAF and other personnel in the maintenance of military electronic equipment. The school is located at Pimlico Airport, Baltimore.

Self-Sealing Tanks: More than \$30,000,000 in contracts to build self-sealing fuel tanks for Boeing B-29 and B-47 bombers has been received by the U. S. Rubber Co.'s mechanical goods division plant at Fort Wayne, Ind.

Mobilization Guide: A "Mobilization Guide for Small Business" has been issued by Defense Production Administration, telling how to get on government bid lists, how to finance plant construction, how to obtain help in getting materials, etc. It's available from Commerce Dept. field offices.

People: Frank Watson has been named vice president in charge of contracts administration division of Hiller Helicopters, and William Renison was appointed factory manager.

PLANES & EQUIPMENT

4-0-4 Off Line: First Martin 4-0-4 is now off the production line and is undergoing structural tests. Next plane completed will probably be first to undergo flight tests since it will be off the line before the first one is through structural tests.

Turboprop for YC-124: Douglas Aircraft Co. has received a sample YT-34-P-1 turboprop engine from Pratt & Whitney to run tests before installing it in the YC-124B. Neither the engines or the plane will be ready for six or nine months.

Propane-Using Aeronca: A propane fuel system has been installed in a four-place Aeronca owned by L. L. Hughes, Oklahoma City. The plane's fuel tank is pressurized to keep the propane liquefied until it is ready for carburetion. Owner reports cost of operation is much less because propane costs 8c a gallon in Oklahoma as against 31c for aviation gas.

R4D Conversions: Douglas Aircraft Co. is converting 20 Navy R4D transports into R4D-8's, Navy version of the Super DC-3. About 100 will be converted in all, but there are no plans for modernizing the other 400 in use by the Navy.

Testing Machine: A completely automatic machine to test and certify the hardness of sheet metal parts is being used to help produce the Fairchild C-119. The device is manufactured by the Topflight Tool Co., York, Pa.

F-47 Overhaul: About 100 Republic F-47 Thunderbolts are being overhauled by the Texas Engineering & Manufacturing Co. but USAF refuses to comment on their future use.

Vaporizing System: A vaporizing system which provides even distribution of the fuel injected into a combustion chamber has been developed by A. V. Roe Canada, Ltd. An annular nozzle type of vaporizer is used.

MILITARY

Materiel Control Office: The newly-created office of Assistant for Materiel and Program Control will be headed by Maj. Gen. Charles B. Stone III. The office will coordinate the budget and scheduling programs of

(Continued opposite page 58)

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other publications

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Editor and Publisher

WAYNE W. PARRISH

Executive Editor News Director

ERIC BRAMLEY LEONARD EISERER

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FRED S. HUNTER West Coast Editor
RICHARD G. WORCESTER European Editor
HERBERT SHAW Air Materiel Command
PAGE SHAMBERGER Flying Field Reporter

Director of Advertising: Stephen R. Kent

Business Manager: John H. Poole

Circulation Promotion: Robert Steinberg

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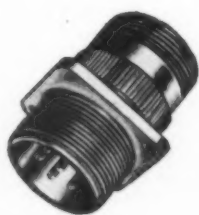
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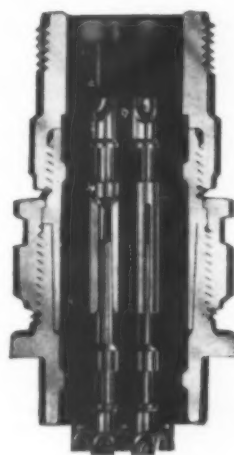
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pany airplanes; they have opened brand new trade, selling, purchasing and management horizons.

The Wisconsin panel discussion, participated in by executives of four industrial plane-owning concerns of that state, brought out the fact that the mere existence of a company-owned airplane "sold" many officials on flying. Travel on scheduled airlines has increased as much as 800% in some companies since their own airplanes were obtained. Officials and salesmen formerly unconvinced that the airlines saved time and money have been educated through trips in company planes.

One company has expedited its purchasing by flying its buyers on one-day trips. A manufacturer of parts for heavy mining equipment converts its twin-engined Beech to a freighter when a customer needs a part urgently, and most of its customers are not on airline stops. Another company makes a practice of hopping into a major city, picking up customers in the morning, flying them to the plant for the day and returning them home by evening. In general all of this use is supplemental to airline travel. Whatever ticket sales have been lost by airlines to company flights are being replaced by a general over-all increase in air travel in which the airlines gain the major portion. When weather conditions are poor the company airplanes often sit on the ground and the airlines are used.

There is a definite trend toward the hiring of professional experienced pilots by industrial plane owners, thus opening up an important new field of employment. The extensive airways and airports facilities provided by Federal and local governments are getting greater use. There is a trend, too, toward larger aircraft; two-place airplanes are now used chiefly by salesmen making their rounds.

The industrial use of airplanes is certainly not new, but it has become much more of a precise business in recent years. The competitive factor in American industry will inevitably increase corporation fleets—no company can afford to let a competitor "get there first" by air. In general the recent spread of company aircraft seems to us to be one of the most heartening developments in civil aviation beneficial to airlines, airports, local operators and manufacturers as well as making greater use of airway facilities provided by the government for that very purpose. The airplane is no longer a novelty in American industry—it is a vital working tool of considerable and growing importance in our business economy.

History Repeating?

CAB MEMBER Oswald Ryan in a speech the other day reminded government and industry that they should not be basing plans for route expansions on the current high level of traffic which all airlines are enjoying. They should remember, he said, the over-optimism that existed immediately following World War II and the economic crisis that hit the industry in 1947 and 1948.

There are signs that indicate that history is again repeating itself. An air transport future is

being predicted upon the apparent assumption that the present air traffic demand is a normal demand and has come to stay, "and this despite the fact that a very large part of the current traffic increase is directly related to the military effort."

Don't disregard the lessons of World War II, he warns, and his word of caution is worth heeding, especially with extensive additions to airline fleets coming in the next 18 months.

"In considering the requirements of an economically sound air transport industry we must take account not only of the conditions prevailing during times of extraordinary traffic demand such as that which presently prevails, but that we must also take into account the situation which will confront the industry when economic conditions become less favorable.

"A transportation business, to be sound, must be able to weather the economic storms as well as to ride the waves in prosperous times. It would be short-sighted, indeed, if those concerned with air transportation should now base their plans and decisions for expansion upon the assumption that the economic conditions in this industry would always be favorable. We know from post-war experience that the air transport industry can pass with surprising speed from a relatively prosperous condition to a condition of grave crisis and can do this even when the rest of the national economy is in a sound condition."

To which we add "Amen."

Here's The 3c Fare

IN THE *Saturday Evening Post* in 1945, C. R. Smith, president of American Airlines, said what the country needed was 3c-a-mile air fares. Inflation then set in and any thoughts of 3c fares vanished. The direction was upwards to 6c a mile.

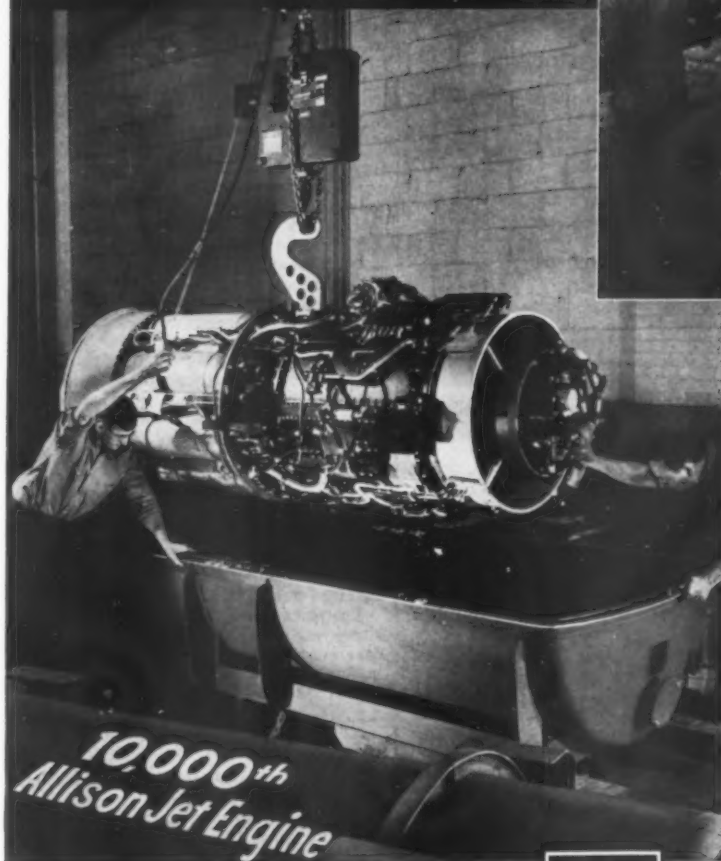
But C. R. Smith has his 3c fare today and so do all airlines. In 1940 the average passenger return to all airlines was 5.07c. In 1950 this return was 5.47c. But in terms of the 1940 Dollar, the 1950 return was 2.98c. The actual airline fares have remained steady while costs have continued to rise. What C. R. Smith was really talking about in 1945—increased efficiency and volume combined with lower costs—has come to pass within five years.

WAYNE W. PARRISH

Atomic Transports Foreseen in 25 Years

Aero Club of Washington, during ceremonies saluting United Air Lines on the 25th anniversary of its operations, heard UAL vice president-sales Harold Cray predict that in less than five years the airlines would be operating turbo-prop aircraft at 380 miles an hour, within 10 years jets at 600 miles per hour and possibly in 25 years, atomic powered planes flying at 1,000 mph. He also said that under new mail rates approved by the Interstate Commerce Commission, the railroads were carrying first class mail at only slightly less cost to the government than the airlines under the 60c ton-mile rate. He predicted all first class mail, covering 400 miles or more would soon be carried by air at regular rates and is now being done in Canada.

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Today, the 10,000 Allison jet engines have accumulated more than 800,000 hours in the air.

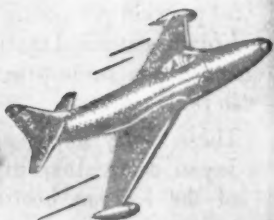
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To the Editor:

On page 118 of your most interesting issue of April 16, 1951, there is an error which I should like to call to your attention.

Your feature entitled "When U. S. Air Service Began" reports that "on April 1, 1926—Florida Airways begins service Atlanta-Jacksonville."

The original Florida Airways did begin operations on April 1, 1926, but it was between Jacksonville, Tampa and Miami. The life span of the original Florida Airways was short—from April to August, 1926—during which time they carried mail aggregating a net weight of 2,526 pounds. There is no record that their service ever extended to Atlanta, as you report. E. V. Rickenbacker and Reed Chambers, both of whom are living, were the principals of this company and, I am sure, would confirm this correction.

WILLIAM C. LAZARUS
Lt. Col. USAF

Non-Sked Competition

To The Editor:

What is all this hulabaloo about the irregular carriers offering severe competition to the scheduled airlines?

It is my observation that some 10 years ago the scheduled airlines surveyed the field of air coach or high density seating. In that survey it was determined that coach type travel was not economical, and the idea was passed off by the statement that there is only one class of air travel. The schedules stuck by their guns even through the war years when those additional seats were so badly needed. Even after the war the general opinion prevailed to let the non-skeds try as they were sure to go broke making the scheduled lines even stronger.

This observer has had the unique opportunity to observe this facet of aviation by flying as a pilot of both scheduled airlines, non-scheduled airlines and as owner-manager of an irregular carrier ticket agency.

To strengthen my argument I have surveyed over five thousand irregular carrier passengers over a period of the last two years. The following questions were asked during the flight:

1. Have you traveled by air before?
Passengers answered "no" 54% of the time.
2. Have you traveled on non-scheduled planes before?
Passengers answered "Yes" 23% of the time.
3. How would you have made this trip if not by this method?
11% would have traveled via scheduled airlines.
13% would not have made the trip.
4. Is your final destination other than a point served by this irregular carrier airline?
42% said "Yes."
5. Is this service a good travel bargain?
97% said "Yes."

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AMERICAN AVIATION



**COMPLETELY INTEGRATED SYSTEM WILL
AUTOMATICALLY CONTROL CABIN PRESSURE AND TEMPERATURE FOR
MAXIMUM PASSENGER COMFORT FROM SEA LEVEL TO OVER 20,000 FEET!**

Once again AiResearch is the choice! Consolidated Vultee Aircraft Corporation has designated AiResearch pressurizing and air conditioning for its new Convair Liner 340 air transport.

This is the third new high-altitude commercial air transport announced in the United States in the past year to be *completely* pressurized and air conditioned by AiResearch. In addition to the Convair Liner 340, these advance aircraft types are the Martin 4-0-4 and the Lockheed 1049 series Super Constellation.

The systems designed and built by AiResearch for the Convair Liner 340 include 23 different items such as cabin superchargers, cooling turbines, heat exchangers,

water separators, complete electronic temperature control systems, cabin pressure control valves, and selector controls.

Completely integrated, the system will control cabin altitude and air conditioning automatically from sea level to over 20,000 feet, *including air conditioning while the airplane is on the ground.*

AiResearch is the only company supplying such *complete* pressurizing and air conditioning systems from a single source. Today AiResearch systems, or component parts, are used on *all* high-altitude commercial transports built in the United States.

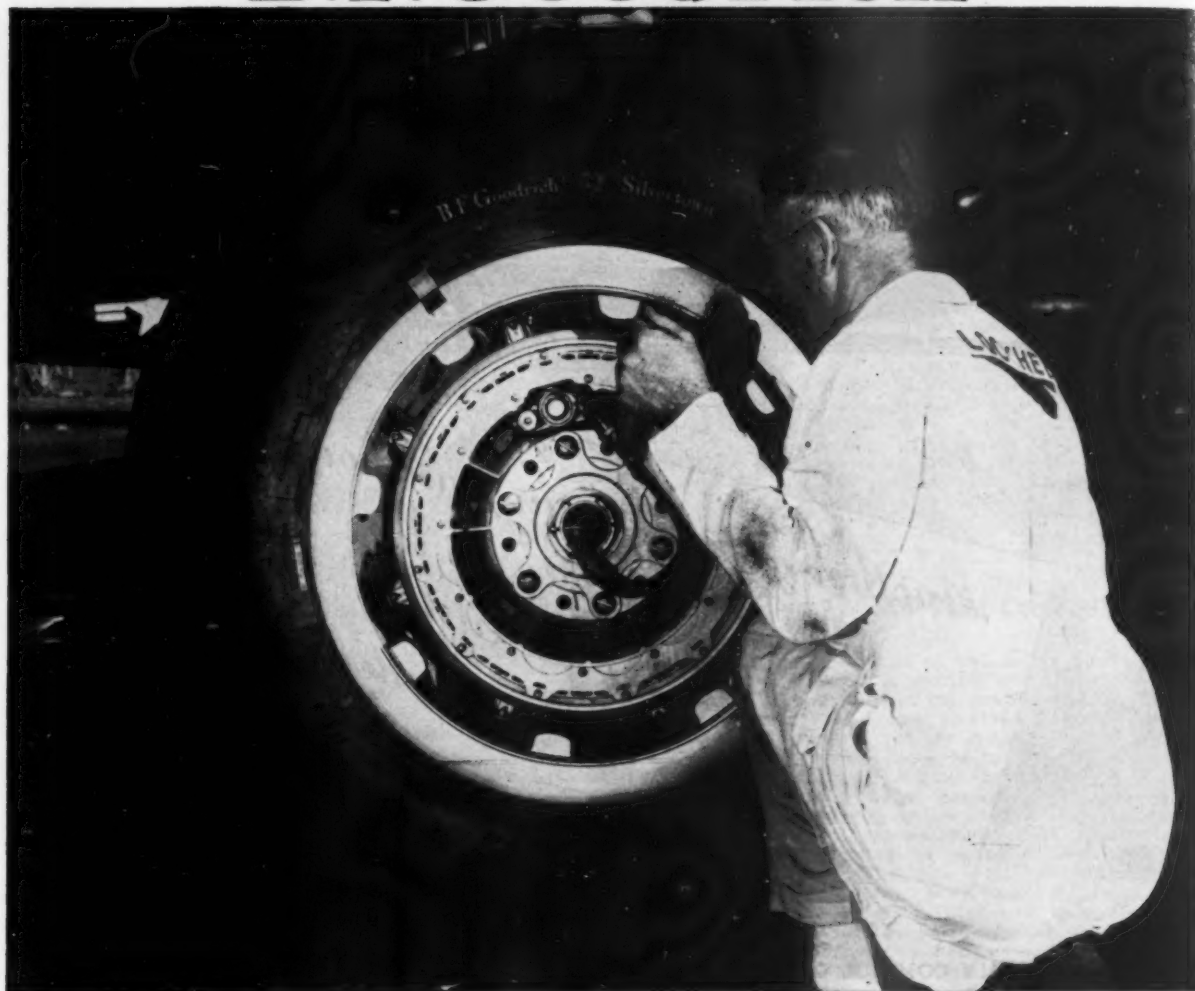
.....
• *AiResearch—Specialists in the design and manufacture of equipment involving the use of high-speed wheels—is a leader in the following major categories:*

Air Turbine Refrigeration • Cabin Superchargers • Gas Turbines • Pneumatic Power Units • Electronic Temperature Controls
Heat Transfer Equipment • Electric Actuators • Cabin Pressure Controls

AiResearch Manufacturing Company, Dept. C-6, Los Angeles 45, California



B.F. Goodrich



Weight taken from plane's brakes goes into its wallop

THE NAVY NEPTUNE tracks down "snorkels" with electronic search equipment that these ordinarily radar-proof subs can't hide from. And it packs a powerful wallop with torpedoes, rockets, cannon, and machine guns.

But carrying all this equipment gave Lockheed designers a problem. Every possible pound had to be trimmed off the Neptune's empty weight. When it came to the wheel and brake assembly, they put the problem up to B. F. Goodrich.

B. F. Goodrich brakes can be designed lighter for a given amount of kinetic energy than any other brake because of expander tube design. The brake lining

in new-design B. F. Goodrich Expander Tube brakes is mounted on magnesium shoes—a construction that is lighter, yet gives longer wear. The brake has a new spider-type frame that's both lighter and stronger. And the wheels themselves are light, strong magnesium castings. As a result, B. F. Goodrich wheel and brake assemblies enabled designers of the Lockheed P2V Neptune to save a sizeable amount of weight over other designs.

The BFG brakes also provide smoother, safer landings. They respond smoothly and quickly to minimum pressure, take emergency overloads better,

cannot lock or grab. Plane utilization is increased because there's less in-shop time. Loads are evenly distributed, reducing wear on brake parts. Maintenance is cut.

The new B. F. Goodrich wheel and brake assembly is one of many effective solutions to aviation problems developed by B. F. Goodrich research and engineering. *The B. F. Goodrich Company, Aeronautical Division, Akron, Ohio.*

B.F. Goodrich
FIRST IN RUBBER

AMERICAN AVIATION

Big Money for Small Business . . .



★ \$14 Billion for Aircraft Subcontractors

★ Procurement Clinics Broaden Base

★ 60,000 Companies Share Program

By JAMES J. HAGGERTY, JR.

THERE appears to be a widespread belief today that the huge sums being appropriated for aircraft production are being funneled to only a handful of companies, a belief perhaps fostered by the tremendous backlogs being announced by the major airframe and engine companies. But actually the opposite is true.

As the defense production program gets up steam, more and more companies are coming into the aircraft picture. The Department of Defense has gone to extraordinary lengths to live up to its slogan: "Broaden the Base." It has ferreted out, by a number of methods, thousands of firms, most of them small companies which have never before had a defense contract and assigned them work suited to their production capabilities.

A look at the program as it stands today is evidence that the services have been eminently successful in pursuing the base-broadening policy. At the moment, more than 60,000 firms are working on a total of 170,000 defense contracts. More than 52,000 of these firms are small businesses (by Department of Defense definition, a company which has fewer than 500 employees).

\$14 Billion for Subcontracts

The combined services will channel some \$28 billion into aircraft production during the current fiscal year (1951) and the next. Of this, about \$14 billion will go to subcontractors and suppliers, and \$8.4 billion of that (60%) will go to small businesses.

Within the next year, when the impact of the orders placed in the past several months is felt, the percentage of the dollar volume available to subcontractors and small businesses is expected to go even higher.

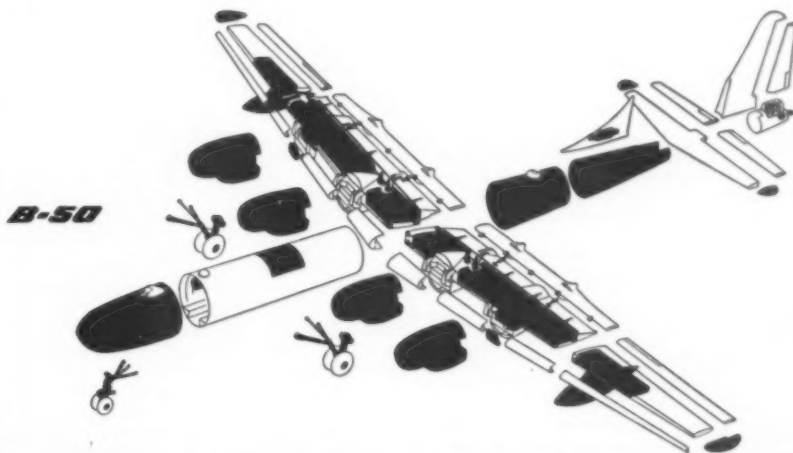
Subcontracting in the aircraft industry is now approaching World War II levels, on the basis of the percentage of a program which is subcontracted, although the volume of subcontracting does not begin to compare. The reason for the lower volume is the fact that the quantities of planes being ordered, even under the partial mobilization program, do not compare with wartime

production; projected production rates are only 10 to 15% of the World War II rate.

The reason for the high percentage of subcontracting is that the emphasis today is not so much on production as producibility—expanding the production base so that we can build 50,000 planes a year when and if it becomes necessary to do so.

Base-Spreading Purposes

To provide the base for such a production rate, it is necessary to get every available manufacturer into the picture, thus the current stress on spreading defense contracts



THIS EXPLODED view of Boeing's B-50 is an example of the extent of subcontracting in the airframe industry. Shaded areas are subcontracted portions. Boeing subcontracts 42.1% of all its work and another 25% goes for manufactured parts or raw materials.



GEOGRAPHICALLY, aircraft subcontracts are widely distributed, with 43 states having production sources. This map shows the distribution of the 60,851 companies in the aircraft production program. New primary production sources being prepared in Tulsa, Okla., and Marietta, Ga., will boost source totals of those states considerably.

throughout industry as widely as possible. This contract spreading has three important purposes:

- **By developing a number of sources** for a production item instead of one or two, it insures continuance of production even should some of the sources be knocked out by enemy attack;
- **By providing work for industries** whose normal civilian production would be curtailed by material shortages, it provides a degree of national economic stability;
- **By providing defense production know-how** to new firms not familiar with the production of such complicated equipment as aircraft components, it strengthens the mobilization base and saves the months it would require these firms to get that know-how if they were called into the picture on M-Day.

Seven-Point Program

To carry out the base broadening program, the government uses a seven-point yardstick:

- 1) **Wherever possible** make use of the industrial mobilization program previously developed, whereby prime contractors had pre-selected their mobilization subcontractors and given them an idea of what type of production would be expected of them;
- 2) **Distribute contracts** among the

widest number of competent suppliers;

- 3) **Use existing open plant space** rather than build new facilities;
- 4) **Employ additional contractors** to produce an item rather than use multi-shift or overtime operations in plants already producing it;
- 5) **Employ to the greatest extent** possible the talents of small businesses;
- 6) **Encourage prime contractors** to subcontract as much of their production as is practicable;
- 7) **Place contracts** with a view toward transportation economy.

The influx of new business firms into the defense production program has spread manufacturing sources over a wide area in the U. S. Forty-three states now have defense production sources and 11 of them have more than 1,000 separate firms involved in the program. Only Idaho, Montana, Nevada, North Dakota and Utah are not represented (see map).

The major geographical areas of aircraft and component production are the state of Washington; southern California; the Dallas-Fort Worth area of Texas; Wichita, Kans.; St. Louis, Mo.; Hartford, Conn.; Massachusetts; New York, especially Buffalo, Long Island and Schenectady; New Jersey; Hagerstown and Baltimore, Md.; the Philadelphia and Pittsburgh areas of Pennsylvania;

and throughout the Midwest, especially the Dayton and Cleveland areas of Ohio, Indianapolis, Ind., Detroit, Mich., and Chicago, Ill.

More Companies Wanted

But despite the number of contractors already in the program, the Department of Defense wants still more companies, particularly those who can handle subcontract work for large prime contractors. To find these additional companies, the Department of Defense has developed a new process known as the procurement clinic.

The clinic provides a meeting ground for prime contractors who are seeking help and small business firms who would like to get into the program but who aren't sure just what they can contribute.

At a clinic, a number of large prime contractors in a given area display exhibits of the type of equipment they are building—planes, propellers, engines, electronic equipment, etc. The exhibits are usually broken down in such a way that small components of the finished item are visible. Small businessmen are invited to the clinic and they wander from one exhibit to the next, inspecting the various components to see if their production facilities could turn them out. If they find a part which they think they could make, purchasing agents and engineers from the prime contracting

plant are on hand to explain in detail the workmanship involved.

Started by Curtiss-Wright

The idea was first developed by Curtiss-Wright Corp. early this year. With a sudden influx of contracts for jet and piston engines after the outbreak of war in Korea, C-W was faced with the problem of finding large numbers of subcontractors to get the program started as quickly as possible. So the company scheduled a series of exhibits in a number of major cities, displaying the parts it wanted to farm out to subcontractors. The response was more than worth the trouble.

The Air Force was the first service to see the value of such a program. Brig. Gen. Arthur Thomas, who commands the USAF's Eastern Air Procurement District, decided that if one company had enjoyed such success with an exhibit, a large number of exhibitors who would offer a much wider range of subcontract work would naturally attract a much larger number of subcontractors. Accordingly, he organized the first Air Force procurement clinic in New York.

The clinic was held in Thomas' office building the week of February 19 and the response surprised everyone. Twenty-seven prime contractors contributed exhibits and, despite the fact that one of the days of that week was a holiday, 3,894 potential subcontractors turned up to see if there was an item they could make. For quite a few of them it meant good-sized contracts. A total of 25 subcontracts worth \$486,000 were let on the spot and negotiations were started on another 38 subcontracts of undetermined value.

Clinic Held Over

The clinic was so successful that it was decided to continue it for a second week. By the end of the second week it was estimated that the clinic had sponsored the award of 116 subcontracts with a total value of \$4,827,700. But, in addition, prime contractors made many valuable contacts among small businessmen for whom they have no immediate work but will be able to use later in the program.

Encouraged by the success of the first clinic, the USAF decided to hold another one, this time sponsored by the Midcentral Procurement District in the Chicago industrial area. From April 30 to May 9, 84 prime contractors displayed their products to an estimated 10,000 representatives of small business firms from all over the country.

Exhibits ranged from tiny electronic components to complete jet engines. One engine manufacturer laid out a complete exhibit of 1,100 parts of an aircraft engine which he wanted to subcontract. Final results of the second clinic have not yet been tabulated, but it is certain that the

Small Business:

How To Get A Defense Contract

Through Procurement Clinics: The Department of Defense is currently holding a series of procurement clinics at which prime contractors exhibit breakdowns of their products, displaying parts they want to farm out to subcontractors. Three clinics have been held at New York, Boston and Chicago. Three more are currently planned: one at Detroit in July and one each at Los Angeles and Fort Worth later in the year.

For information as to exact sites and dates contact:

Detroit Clinic: Central Air Procurement District, USAF, West Warren and Lonyo Aves., Detroit 32, Mich. Telephone: Hogarth 9730

Los Angeles Clinic: Western Air Procurement District, USAF, 155 W. Washington Blvd., P. O. Box 3849, Terminal Annex, Los Angeles, Calif. Telephone: Prospect 4711

Fort Worth Clinic: Southern Air Procurement District, USAF, Government Aircraft Plant Number 4, Fort Worth 1, Texas. Telephone: 72181

Through Armed Services Procurement Area Councils: The Department of Defense is now establishing Armed Services Procurement Area Councils in 16 major regions, to help the small businessman find a place in the defense production program. Each council is composed of procurement officers of the Army, Navy and Air Force and representatives of local industry. The job of the councils is to study the industrial capacity of its area and fit its production resources into the overall program. Small businessmen can secure help in locating work by contacting the council in their areas. Councils are located as follows:

1. c/o SINM,* 50 7th Street NE, Atlanta, Ga. Capt. D. T. Giles, USN, acting chairman.

2. c/o SINM, 495 Summer Street, Boston 10, Mass. Capt. A. R. Taylor, USN, acting chairman.

3. c/o AFPO,** 1660 E. Hyde Park Blvd., Chicago, Ill. Col. R. L. Finkenstaedt, USAF, acting chairman.

4. c/o Cleveland Ordnance District, 1367 E. 6th Street, Cleveland, O. Lt. Col. E. A. Saholsky, acting chairman.

5. c/o Headquarters, Southern Air Procurement District, 3309 Winthrop, P. O. Box 9038, Fort Worth, Tex. Lt. Col. Rush Gibbs, USAF, acting chairman.

6. c/o Detroit Ordnance District, 6301 W. Jefferson Ave., Detroit, Mich. Lt. Col. John Cone, USA, acting chairman.

7. c/o AFPO, 155 W. Washington Blvd., Los Angeles, Calif. Brig. Gen. John Stace, USAF, acting chairman.

8. c/o New York Quartermaster Procurement Agency, 111 E. 16th Street, New York 3, N. Y. Brig. Gen. H. L. Peckham, USA, acting chairman.

9. c/o SINM, 17 Bries Ave., Upper Darby, Pa. Capt. H. A. Ingram, USN, acting chairman.

10. c/o Corps of Engineers, Federal Bldg., 12th and Market Streets, St. Louis, Mo. Col. Beverly Snow, USA, acting chairman.

11. c/o SINM, Bldg. 271, U. S. Naval Station, Treasure Island, San Francisco, Calif. Capt. J. T. Wulff, USN, acting chairman.

12. c/o USAF Plant Representative, Boeing Airplane Co., Seattle, Wash. Col. Wm. Davis, USAF, acting chairman.

13. c/o Minneapolis Air Regional Office, Mid-central Air Procurement District, 920 Second Ave. South, Minneapolis 2, Minn. Maj. Robert T. LeBeck, acting chairman.

14. Richmond, Va.—to be established.

15. Denver, Colo.—to be established.

16. Kansas City, Kans.—to be established.

* Supervising Inspector of Naval Materiel

** Air Force Procurement Field Office

By direct contact with known prime contractors: In addition to taking advantage of the government-sponsored subcontractor recruiting programs, small businessmen may contact directly large prime contractors and offer their services. Lists of major contractors can be inspected at numerous field procurement offices throughout the U. S. Prime contractors recommend that potential subcontractors apply first by letter, stating the following:

1) **type of work** the subcontractor is equipped to perform, including reference to any previous experience, such as World War II work;

2) **size and location of plant** or plants, including amount of production floor space, size of bays or other subdivisions, floor strength and outlet dimensions;

3) **a complete list of all power machinery** and equipment available including that on order with expected delivery dates, identified by factory number and noting its age and condition and types of processing, treating, plating or welding facilities;

4) **total number of employees**, broken down into production and other employees; principal officials by name, proportion of skilled to unskilled workers, special skills possessed and wage scales;

5) **bank and credit references;**

6) **labor resources**, facilities for plant security, transportation facilities (rail and highway network and plant freight handling facilities), technical background, and proportion of facilities and capacity available for additional work.

Results of First Subcontractors Clinic

Prime Contractors	Sub-contracts ¹	Dollar Value ¹	Remarks from Firms
Cameraflex Corp.	3	\$40,000 plus 30% of prime dollar value	Will save 20 to 40% reduction in time required to place subcontract business.
Curtiss-Wright Electronic . . . . .	..	.....	150 potential subs interviewed. Estimated that 10% are equipped to produce items to be used.
Eastern Rotocraft	44	.....	Developed sizable number of subs in Phila. area. Optimistic as to actual performance corresponding to their present promises.
Eclipse-Pioneer Div. . . . .	..	.....	Participation was of definite value to them; investigations and negotiations can not be processed quickly.
Fairchild Camera & Instrument Co.	20	.....	This action has come about as a direct result of the exhibit.
Farrand Optical Co.	50	\$700,000 per year	
Kearfott Co. . . . .	..	.....	Now cataloging 200 possible potential subs. Results so far indicate five are suitable.
Lavoie Laboratories	10	\$4,000,000	300 potential subs listed 75% will be useful in future.
Liquidometer Corp.	10	\$50,000	100 subs have been listed and have received blue prints for quotation.
Lite Mfg. Co. . . . .	..	\$16,000	Now negotiating to subcontract an item which will amount to approx. \$16,000.
W. L. Maxson Corp.	12	\$150,000	Plans to subcontract 10% of all work.
Radio Corp. of America . . . . .	..	.....	250 potential subs now being processed. 15 of these firms employ more than 500 people.
Republic Aviation Corp.	11	\$438,000	Expresses appreciation for a job well done.
Sigmund Eisner Co.	10	.....	Will use these 10 potential subs when we receive additional contracts from the services.
Specialty Assembly & Packing Co.	17	.....	Consider exhibit very successful from our point of view, made contact with over 100 firms we consider suitable.
Spencer - Lycoming Div. AVCO Mfg. Co. . . . .	..	\$125,000	Sent out request for quotations to 16 potential subs. 38 more will be contacted in near future.
Weston Electric Instrument Corp.	2	\$8,000	Contacted numerous sources of interest, plan placing further orders depending upon our requirements.
Wright Aeronautical Corp. . . . .	..	.....	Now forwarding blue-prints and specs to large number of potential suppliers contacted at exhibit.
Total	189	\$4,827,700	

¹ Includes subcontracts let, in negotiation or anticipated.

dollar volume of subcontracts let went well above that of the first clinic.

The Air Force's two successful ventures into the clinic field brought the Army and Navy into the program, and on May 15 the first joint Armed Services Procurement Clinic opened in Boston, with over 100 prime contractors exhibiting. Three more joint clinics are planned, although dates have not yet been selected. They will be held in Detroit, Los Angeles and Fort Worth.

In addition to the clinics, the Department of Defense has another method of recruiting subcontractors. In 16 major industrial centers, Armed Services Procurement Area Councils are being established. On each council are procurement officers of each of the three services and representatives of local industry, whose job it is to study the industrial capacity of the area and decide how that area can best contribute to the overall defense production program. Small business firms can contact these councils and find their places in the program.

Subcontractors' Market

Here are some examples of how the subcontractor recruiting program has affected individual major air-frame and engine companies:

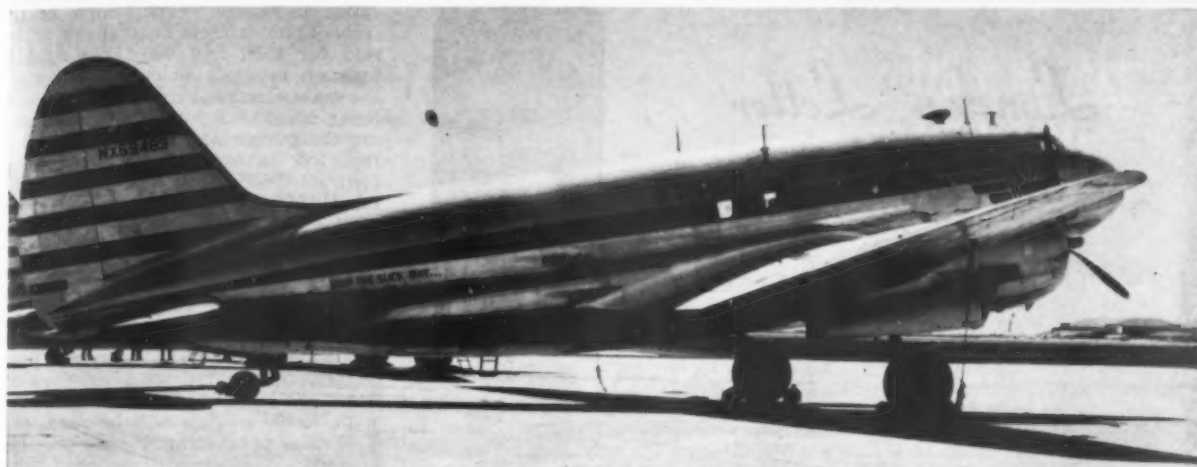
Douglas Aircraft Co. paid out 34.7% of its sales dollar to subcontractors and suppliers in 1950, but in 1951 it will distribute 46.5%. Total number of subcontractors or vendors will rise from 3,000 in 1950 to about 4,000 this year, of which an estimated 3,650 will be small businesses.

Pratt & Whitney Aircraft Division will distribute \$250,000,000 among subcontractors and suppliers this year. P & W, which buys a total of 30,000 parts for its jet and piston engines from outside sources, has 5,285 companies on its subcontractor-supplier list; 90% of them are small businesses.

Boeing Airplane Co. is currently subcontracting 42.1% of the dollar value of its production contracts for the B-47 jet bomber, the C-97 Strato-freighter and the B-50 piston-engine bomber. In addition, 25% goes either for manufactured parts or for raw material. Boeing keeps only 32.9% of the Air Force's dollar for its own work.

Lockheed Aircraft Corp. will distribute \$300,000,000 worth of business to subcontractors and suppliers this year, 127% more than last year's \$132,000,000. About 40%, or \$125,000,000, will go to 3,000 suppliers in the area near Lockheed's Burbank, Calif., plant.

Consolidated Vultee Aircraft Corp.'s Fort Worth Division has 40 major subcontractors and 1,610 suppliers working on its B-36 bomber program. Dollar volume of subcontracting has increased from 12% of total production costs in 1949 to about 33% now.



C-46---The Airplane Nobody Wanted

THIS is the story of the airplane nobody wanted: the Curtiss-Wright C-46. The C-46 Commando has had an interesting and varied life. Strangely enough the Commando is today, ten years after initial production, at the peak of its popularity. Within the past few weeks converted C-46's have been selling at record prices. One sold recently for \$137,000, another for \$125,000 and prices well above \$100,000 are becoming commonplace.

Designed as a 36-passenger commercial transport, designated the CW-20, the Curtiss Commando was pressed into military service long before it was ready. At the time of the new famous "Hump" operation in India, the C-46 was the logical aircraft to handle this monumental task. The Douglas DC-3, it was said, was too small. The Douglas DC-4 was not ready for production on the scale required.

The C-46 was mass produced in short order. The prototype CW-20 had flown in 1940. First C-46 production was at Curtiss-Wright's Buffalo, N. Y., plant with 46 planes produced in 1942, 353 in 1943, 1,152 in 1944 and 1,153 in about six months of 1945. The company's plants in Louisville, and St. Louis brought the total number of C-46's to 3,141 by war's end.

Rushed Into War

When first introduced into operational service the plane had far too little operational proving to eliminate even the major bugs. The Commandos soon had a bad reputation, one it would take years to overcome. Maintenance difficulties kept the planes on the ground a good part of the time, they became "hangar queens." When they did fly accidents and near accidents occurred at an alarming rate. The tough job represented in the Hump operation,

the long-range flight problems presented in ferrying the aircraft to the operational theaters and newly trained green pilots all contributed to the plane's early misfortunes.

Many of the 3,000-odd C-46's had been wiped out in service activities before the war ended. Even so hundreds of the Commando's were still on hand, scattered across the war fronts and stored in surplus aircraft depots.

What to do with them? The Surplus Property Board, later to be known by many other names, debated this problem along with many other surplus aircraft types. Military and civil membership on this board was almost unanimously in favor of keeping the C-46 off the commercial market. At the insistence of one member, CAA was requested to make a study of the plane, see if it might be modified to meet CAA requirements for commercial operations.

C-46's Low Ebb

The conclusion: It would be impossible to certificate the aircraft under existing regulations. Finally it was decided to make the aircraft available to civil markets at a token price of \$5,000 with the understanding that CAA did not feel the plane could be certificated. A price of \$300 was established for surplus C-46's for use in ground schools in training activities, it being understood that the planes could not later be transferred to flight activities.

The C-46 was truly the airplane nobody wanted.

United Services for Air, a corporation which has since disappeared from the aviation scene, figured out a modification program, got drawings approved and early in 1946 obtained CAA approval for C-46 operation at 45,000 pounds' gross weight in non-scheduled air carrier operations.

Soon five companies obtained ap-

proval for modification programs to permit the C-46 operation in commercial service. Slick Airways developed the program which proved the most widely accepted. Principal modification was a reworked horizontal stabilizer and elevator group, designed to overcome control shortcomings which had contributed substantially to the aircraft's doubtful reputation.

Today there are 129 C-46's in U. S. air carrier operation. Forty-six of these are in domestic service in scheduled cargo operations, the remainder in domestic and international irregular air carrier service including passenger-carrying operations. CAB's figures show another 22 in foreign scheduled airline operation a year ago, more have been added in recent months.

Not only has the price of the C-46 skyrocketed from a level of about \$5,000 two years ago, with few takers, to the \$125,000 class today but C-46 rentals are bringing equally high bids. Monthly rental rates for the C-46's now run between \$5,000 (the initial surplus price of the plane) and \$8,000.

Problem in Parts

One factor limiting USAF use of the C-46 today is the parts problem. Parts have been getting increasingly scarce. Surplus C-46 parts are bringing higher price today than the initial USAF procurement cost. Windshields, windows, exhaust collector rings, hydraulic seals, etc. have been particularly hard to get. Slick is the major supplier of new C-46 parts, Curtiss-Wright having long since given up parts manufacture on this plane.

The parts problem is aggravated, in addition to the increased utilization which raises parts needs, by the conversion of planes which would never have been considered for oper-

London Letter

By Richard G. Worcester



IT WOULD be interesting to know at exactly what point BOAC decided to use the Comets on a high-speed, 1,000-mile shuttle service instead of on 1,500-mile stages to Australia.

The reasons for this decision are easier to see; they are simply that the Ghost-Comets do not have the range and, in any case, the airfields have not been prepared for Comet operations. Ultimately, no doubt the Avon-Comets will be used by BOAC on routes now flown by Constellations.

It is no reflection on the Comet as a transport, but the change in emphasis is symptomatic of the difficulties in operating any kind of pure-jet transport and the determination of the carrier that the Comet should carry on the record of safety which has long been as good as the best in the air transport business.

Last week one of the two prototype Comets was lent formally to BOAC for proving flights and it will in due course be joined by the first production transport already flying. The fourth Comet is in the final assembly stage.

Advance bookings of Silver Cities Airways on their cross-Channel car ferry already exceed the total number of cars and vehicles carried last year and a figure of 10,000 is expected this year by the company. In 1948 they carried 176 cars; in 1949 it was 2,700 and in 1950 nearly 5,000. The five-year operating license, granted by associate agreement with BEA, has enabled Silver City to make long-term plans and increase its fleet of Bristol Freighters to six for the mid-season peak.

The raising of status of the U. S. 3rd Air Division in Britain to the 3rd Air Force with the addition of another division, the 7th Air Division, has been seen in Britain as the outcome of the policy of the U. S. to build up strategic bombers in both the European and the Far Eastern theatres.

Although the B-47 production line is believed to be building up quickly at Boeing's Wichita plant, there is surprise in London that the B-50 line was allowed to dry up. Meanwhile, the 7th Air Division will be based at the much discussed new airfield at Greenham Common, Newbury.

In addition the USAF is based at five airfields in the district known as East Anglia—which is the low-lying land on the eastern coast of England. The Republic F-84E Thunderjet fighters based at Manston airfield with the RAF are also a part of the 3rd Air Force.

There is also a program in hand to modernize a number of British airfields and runways for military purposes. Some of these improved new airfields would be available if the USAF decided to expand further. They would also be suitable for large multi-jet types like the B-47.

Bristol Aeroplane Co. has been expecting an order for military versions of the Bristol Freighter for some time. These aircraft should have been ordered a long time ago. The French have recognized the need for this type of aircraft in the contract which has just been placed for 160 Nord 2501 (which look exactly like the Fairchild C-119) powered by Bristol Hercules 763 engines.

The de Havilland Engine Co.'s annual general meeting referred to the fact that there are six factories now building the company's Ghost turbine nominally rated at 5,000 lbs. static thrust. The Italians are to have two separate factories; there are two others in England, and Sweden and Switzerland are to build the engine.

The company's big selling point with this jet engine is that the compressor is a single-sided type which means air can be passed straight to the blades. The alternative arrangement of a double-sided compressor entails building a plenum chamber round the engine so that air can be passed over to the rear face. The Rolls-Royce argument for the double-sided type is that, for a given diameter of compressor, the double sided compressor will inevitably handle more air. Nobody has yet been able to prove which design really gives more installed thrust. As both the Nene and the Ghost, and their smaller counterparts, the Goblin and Derwent, are all phenomenally successful engines, perhaps the compressor niceties do not matter much anyway.

ation in earlier years. Some of the school planes, mentioned above, which sold for \$300 and were non-flyable by such methods as cutting through the main electrical circuit wiring, are being sought. Schools are reimbursing the government with \$4,700, it is reported, to overcome the purchase contract limitations, and still clearing \$10,000 or more on sales.

The large cabin in the C-46 (34 feet six inches long by 9 feet 10 inches wide) combines with some 540 square feet of cargo compartment area to make the aircraft a good cargo ship or to provide spacious accommodations for 40 or more passengers. Approved for operations at gross weights up to 48,000 pounds, with 45,000 pounds widely used, the C-46 is a productive and economical aircraft. Foreign airlines report its ton-mile costs at almost half of that of the popular DC-3.

Final Hurdle

But the C-46 is not yet in the clear. Its early commercial operations were spotted with fatal accidents and even the record of the past 18 months has been unfavorable as viewed by CAA. Much of this record can be attributed to operational practices, some of it well outside the law. Yet CAA has decided that, in the interest of public safety, consideration should be given to requiring the certification of the C-46 under the more stringent provisions of the transport category requirements.

In early 1951 Pan American Airways leased a C-46 to CAA with which six weeks of extensive testing was carried on to determine the possibility of accomplishing this end. CAA determined that it is quite possible to make the plane meet "T" category requirements, turned its test results over to CAB who will be asked to determine the future of the plane, particularly its future in passenger-carrying operations.

PEOPLE IN THE NEWS

William L. Smith is now with Aircraft Industries Association as secretary of the Materials Committee and an assistant to George F. Hannaum, director of Industry Planning Service.

Dr. Henry J. E. Reid, director of Langley Aeronautical Laboratory, has completed 30 years' service with NACA.

Roy C. Frank has been advanced from associate solicitor to solicitor in the Post Office Dept., succeeding Frank J. Delaney, who resigned recently to enter private law practice. Louis J. Doyle was appointed associate solicitor.

Dr. Charles S. Draper has been promoted from deputy director to director of the department of aeronautical engineering of Massachusetts Institute of Technology. He succeeds Dr. Jerome C. Hunsaker, who asked to be relieved.

Gilbert L. Bates, former acting chief of CAB's mail rates section and onetime

chief of the international rates section, has been appointed assistant to Board Member Joseph P. Adams.

John Griffin, president of National Aviation Trades Association and president of East Coast Aviation, Boston, has been named chairman of the committee on training of the National Security Resources Board Air Transport Mobilization Survey. He replaces Beverly E. (Beve) Howard, who resigned to devote more time to management of his USAF contract flight school at Moultrie, Ga.

Aviation Calendar

May 28-29—ATS ann. membership meeting, Mayflower Hotel, Washington.

June 3-6—NAA ann. conv., LaSalle Hotel, Chicago.

June 3-8—SAE Summer Meeting, French Lick Springs Hotel, French Lick, Ind.

June 13—ASME semi-ann. meeting of aviation div., Toronto.

June 13-16—AWA ann. convention, Hotel Commodore, New York, N. Y.

June 18-22—American Society for Testing Materials ann. meeting, Atlantic City.

June 21-23—Local Air Service 2nd ann. seminar, Purdue University, Ind.

June 27-28—IAS ann. summer meeting, Western Hqs. Bldg., Los Angeles.

June 28-30—Inst. of Nav. ann. meeting, Hotel New Yorker and Kings Point, N. Y.

July 4-12—EASC 18th Nat'l Soaring Contest, Harris Hill, Elmira, N. Y.

July 19-20—NASAO board of directors meeting, Ky. Dam State Park, Ky.

July 20-22—CAP Nat'l Drill Competition, D. C. area.

Aug. 15-19—99's 5th ann. All Woman Transcontinental Air Race, Santa Ana, Cal. to Detroit.

Aug. 22-26—99's Int'l conv., Mackinac Island, Mich.

Aug. 23-29—Nat'l Flying Farmers Assn. 5th ann. conv., Ft. Worth, Tex.

Sept. 10-14—Instrument Soc. of America 6th Nat'l Instrument Conf. and Exhibit, Sam Houston Coliseum Houston, Texas.

International

June 5-5th Session, Int'l Civil Aviation Organization, Montreal.

June 15-July 1—Paris Int'l Aircraft Exhibition 1951, Grand Palais and Paris airport.

June 23—British Nat'l Air Races 1951, Hatfield Aerodrome, Hertfordshire, Eng.

June 26—ICAO 3rd Eur. Med. Regional Meeting, location undetermined.

July 4-11—FAI, 44th general conf., Brussels.

Aug. —Intern'l Telecom. Union Extraordinary Admin. Radio Conf., Geneva.

Sept. 3-14—Third Intern'l Conf., convened jointly by the Royal Aero. Soc. and the Inst. of the Aero. Sciences of America, Brighton, Sussex, Eng.

Sept. 4—ICAO Search & Research Div. meeting, Montreal.

Sept. 10—IATA 7th Ann. General Meeting, London.

Sept. 11—ICAO, Legal Committee, 8th Session.

Sept. 12-14—Soc. of British Aircraft Constructors, 12th Flying Display and Exhibition, Farnborough, England.

Sept. 25—Intern'l Civil Aviation Org., SAR Div., 3rd Session, Montreal.



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The Scrapper that Wouldn't be Scrapped!

DURING WORLD WAR II, the designer's pencil was as ruthless toward America's fighters as was enemy action. It had to be. For continuous "re-designing" is always essential to continuous aerial supremacy!

Chance Vought's designers were no exception. Their F4U-1 Corsair—first fighter built around a 2,000 h.p. engine and first to reach 400 miles-per-hour—underwent 4 major wartime modifications and literally thousands of minor ones.

But—so sound was her basic design—that, at the end of the war the Corsair stood alone, *the only front-line fighter whose performance was advanced enough to warrant continued development on an uninterrupted postwar production schedule.*

With the addition of radar devices for night fight-

ing, refinements in power, aerodynamics and armament, the Vought Corsair once again roared into action against the enemy—this time over Korea. In this new assignment it performed brilliantly in close air support of Allied ground troops and in disrupting enemy supply lines.

Today—even as Chance Vought's tightly-knit team prepares for quantity production of its newest jet fighter, the "Cutlass"—additional orders have been received for the latest model of the battle-proved Corsair.

The scrapper that wouldn't be scrapped is a flying testimonial to the soundness and thoroughness of Chance Vought engineering, which—in close cooperation with the Navy—has produced top-flight aircraft for the U. S. Navy since 1919.

Chance Vought Aircraft DALLAS, TEXAS

ONE OF THE FOUR DIVISIONS OF UNITED AIRCRAFT CORPORATION
AMERICAN AVIATION

• First Flying Triangle—Convair's XF-92A—Joining Supersonic Research Program at Muroc

By James J. Haggerty, Jr.



A NEW PLANE is about to join the joint Air Force-Navy-National Advisory Committee for Aeronautics supersonic research program—the Convair XF-92A, the world's first delta-wing plane.

The XF-92A was originally an Air Force project, designed to explore the potentialities of the delta, or triangular, wing. The original power plant was an Allison J-33-23 jet engine with a thrust rating of about 5,200 pounds. With this power, the XF-92A made about 80 flights, some of them in the transonic speed range.

Now, however, the old engine has been removed and a new, improved version of the same model, the J-33-29, substituted. The -29 engine will be fitted with an afterburner and should have a thrust rating of more than 8,000 pounds, or more than a pound of thrust for every two pounds of airplane. With this power it should be able to attain some pretty high speeds, due to its extremely clean design (a wing sweepback of 60 degrees compared with the 35 degrees of sweep in the North American F-86 Sabre) and will probably be the fastest jet-powered plane flying.

Testing at Edwards

The XF-92A will probably be going through its warm up paces preparatory to starting the high-speed research program about the time this reaches print. The flight test work will be conducted at Edwards Air Force Base, Muroc, Calif.

Two other special research planes are expected to join the program this year: the Bell X-1 No. 3, which will be operated by NACA, and the Bell X-1A, which the Air Force will fly. The two planes are similar and each will have a new rocket powerplant.

The original X-1, which first broke through the "sonic barrier" and which later attained a top speed of Mach 1.46 (about 960 mph) in a shallow dive above 50,000 feet, had a pressurized fuel pump system wherein gaseous nitrogen was used to force the fuel into the burner chambers. With this system the Reaction Motors rocket engine could only operate at full power for two and a half minutes and top design speed was 1,000 mph.

The two new models will have a later development of the same power plant. In the later model, a specially designed turbo pump forces the fuel into the burners. With this system the engine may be operated at full power for 4.2 minutes and top design speed goes up to 1,700 mph.

Thus, the introduction into the program of the X-1 No. 3 and the X-1A will probably bring about top speeds considerably above the Mach 1.46 attained by Capt. Charley Yeager a couple of years ago. But more important to the researchers is the fact that, with the turbo pump system, the plane may be flown a longer period of time at a given Mach number.

With the old X-1, by the time the plane had accelerated to a high Mach number, the fuel was gone, so the researchers had only a few seconds to observe the behavior of the plane at that speed. With the new system they will be able to note its performance for perhaps as much as two minutes, depending on the desired speed.

Both planes are now in the final stages of completion and are expected to fly later this year. They will be followed by two more versions of the X-1—the X-1B and the X-1D. These planes, identical in configuration with the X-1 No. 3 and the X-1A, will also have the turbo

fuel pump; they carry a different designation only because of the different instrumentation installed. Each will have a separate series of assignments; they will check items like lateral stability, longitudinal stability, friction heat generated, etc. There was also an X-1C, designed for still another type of work, but that project has been shelved.

Six X-1 Models

That makes a total of six models of the X-1 either built or in construction. X-1 No. 1 is now a supersonic shrine in the Smithsonian Institution. X-1 No. 2 is still flying at Muroc and still turning out valuable research data. Since Yeager's Mach 1.46 flight there has been no attempt to top that speed with X-1 No. 2, since the speed is right up against the plane's maximum limit. Faster speeds await the arrival of the turbo-pump versions of the X-1. But X-1 No. 2 has been conducting some high-speed flights above Mach 1, gradually lowering the altitude to observe the effects of supersonic flight at lower altitudes than Yeager flew.

Bell's long awaited X-2 is still a question mark. The X-2 was to have been a considerably faster improvement of the basic X-1 design, with a stainless-steel fuselage to resist high speed friction. It, too, will be rocket powered. But it is now some two years behind schedule. The fuselage had to be machined out of bulk steel, and this presented engineering problems which contributed to the delay. But the real problem has been the development of a new, more powerful rocket engine.

Reaction Motors, Inc., developers of the original X-1 engine, had a design for the X-2 some years ago, but for reasons known only to a few Air Force research and development officials, the contract was given instead to Curtiss-Wright Corp.'s Propeller Division, which had never built a rocket engine. They're still working on it, and from time to time we hear that they just about have the problem licked and the engine will be forthcoming any day, but somehow it never does. Latest word is that it will be ready for installation late this year. Meanwhile, the X-2 fuselage sits patiently waiting at Buffalo, the world's heaviest glider.

Designed for 2,000 MPH

The Douglas X-3, fastest of all the special research planes, is supposed to be ready for first flight about next January. Little has been said about it except that it will have an extremely clean, needle-nosed, "plane-of-the-future" design. An original announcement some time ago listed its design speed as well over 2,000 mph, but this may have been altered somewhat.

Bell's X-5, the company says, will fly "in the near future," but how near was not indicated. The X-5 will have a special assignment apart from high-speed research—it will investigate the potentialities of the variable-sweep wing, that is a wing whose degree of sweep can be changed in flight. The other planes in the special research program are Northrop's X-4, which is now flying and investigating the transonic speed range, and the Douglas D-558-I and D-558-II, the Navy's contributions. Thus, by some time next year there will be a total of 11 planes exploring the transonic and supersonic realm.

Expansion Notes: Douglas Aircraft Co. is purchasing a factory building at Bell, Calif., to manufacture its honeycomb sandwich development . . . Sikorsky Aircraft Division has started building a two-floor extension of its main helicopter plant which will add 135,000 square feet of manufacturing area . . . General Motors Corp. will lease a hangar at Fairfax Municipal Airport, Kansas City, Kans., for its tooling program for Republic F-84F jet fighters, to be built at the nearby Buick-Olds-Pontiac assembly plant . . . Ford Motor Co. will build a new plant for manufacture of fuel injection systems for Wright R-3350 piston engines . . . Pratt & Whitney Aircraft Division is taking over three additional Connecticut facilities . . . Republic Aviation Corp. is opening a branch engineering office in New York City.

B-36A Modernization Complete: Consolidated Vultee Aircraft Corp.'s Fort Worth Division has completed modernization of the last of 22 B-36A bombers. The program included addition of four jet engines to the normal six piston engines and installation of camera equipment. The converted planes become RB-36E's.

103 DC-6B's on Order: Twenty-one airlines have now ordered Douglas DC-6B transports. Latest to join the list was the French airline Compagnie de Transports Aeriens Intercontinentaux, which ordered three, bringing Douglas' commercial DC-6B backlog to 103 planes.

T-28 Subcontract for Goodyear: Goodyear Aircraft Corp. has received a subcontract from North American Aviation for production of wing and empennage assemblies for the Air Force T-28 trainer. Tooling is being shipped to Goodyear's Litchfield, Ariz., and work is to start in June. Completed assemblies will be trucked to NAA's final assembly line at Downey, Calif. The contract runs through 1952.

Growing Lag Times: A Lockheed Aircraft Corp. report illustrates how the procurement span on aircraft materiel is lengthening:

Procurement Time—Weeks
April, 1950 April, 1951

Tension regulators	17	30
Thermo blankets	6	22
Electrical switches	12	35
Gaskets	4	17
Hi-shear rivets	10	22
Hydraulic fittings	10	22
Phillips head screws	12	30
Aluminum forgings	12	30
Cotton and felt cloth	4	17
Alloy tubing	8	22
Stainless steel tubing	10	26
Aluminum welding rod	4	26
Monel wire	6	22
Radio batteries	1½	17

Delivery schedules on main components of Lockheed's F-94 jet fighter include: engines, 56 weeks; landing gear struts, 52 weeks; Zero Readers, 47 weeks; bearings, 43 weeks; nuts, 30 weeks; gun mounts, 24 weeks.

Old C-V Plant Reopening: Avco Manufacturing Corp.'s Bridgeport-Lycoming Division will reactivate part of the old Chance Vought plant in Stratford, Conn., in about a month. First production will be jet engine parts. The plant has been idle since 1949.

Bigger Footprints for Packets: Fairchild Aircraft Division is testing a new tandem landing gear installation on its C-119 troop carrying transport. Purpose is to give the plane a wider landing "footprint" when landing on rough sod or soft surfaces.

Inventory Limits: New regulations of the Controlled Materials Plan, which become effective July 1, limit the amount of copper and aluminum manufacturers may have on hand to only sufficient quantities for the following 60 days of operation. Steel inventories are limited to a 45 day supply.

—J. J. H.

Gareth W. Speer has left Kaiser-Frazer to become treasurer of Piasecki Helicopter Corp., succeeding William F. Palmer, resigned. Paul L. Davis is head of the industrial relations division.

G. O. (Rex) Noville becomes materials representative for Kaiser-Frazer in the Pacific coast area.

William Preston Lane, Jr., former governor of Maryland, elected to board of Fairchild Engine and Airplane Corp.

W. D. Holman, formerly chief of materials for the Fort Worth division of Consolidated Vultee Aircraft, has been appointed chief of the material division of Hiller Helicopters.

Robert R. Miller, formerly with Republic Aviation Corp., has joined Northrop Aircraft as staff assistant to the vice president-customer relations.

William E. Ramsden has been appointed as assistant experimental division manager for Boeing Airplane Co. at Seattle. He has been assistant production manager since 1947. Donald J. Euler, a 22-year Boeing veteran, has been appointed a staff engineer.

J. Nelson Brown has been named treasurer-controller of Kellett Aircraft Corp. Other recent appointments are: George P. Williams III as secretary-general counsel; Harry R. Reynolds as industrial engineer, and Herbert A. Clarke as electronic engineer.

D. S. Flinn has been appointed eastern sales representative for Aeroproducts Division, General Motors Corp., with offices in Washington.

Z. C. Wilkinson and George A. Strompl have been given joint direction of Douglas Aircraft Co.'s Western Pressed Metals Division, with titles of sales manager and production manager respectively.

Leverett (Pete) Wenk has been appointed by Republic Aviation Corp. to the post of director of training.

Edwin J. Ducayet has been named as assistant to Harvey Gaylord, vice president in charge of Bell Aircraft's Helicopter Division, and Matthew R. Barcellona has been named manager of industrial engineering.

Clifford E. Burt has been promoted to assistant factory manager with the chance Vought Division of United Aircraft Corp.

Martin Kelly has been elected vice president of Continental Motors Corp.

Frank Johnson has been named employment manager of Lockheed Aircraft Corp.'s Marietta plant.

Col. Bradley J. Saunders named USAF plant representative at Lockheed Aircraft. Daniel A. Cooper succeeds him as chief of the Air Materiel Command's regional procurement office at Grand Central Airport.

Nils A. Lennartson appointed special assistant to Secretary of the Air Force Thomas K. Finletter in addition to his duties as AF deputy director of public relations.

Design Refinements Improve Production Aero Commander

THERE ARE many measures of good design. The ultimate one is performance. On May 9 Aero Design & Engineering Co., put its Aero Commander to the real test. The small, twin-engined transport took off from Will Rodgers Airport, Oklahoma City, for a non-stop 1,160-mile flight to Washington, D. C.

The takeoff, at full gross weight of 4,800 pounds, was made with only one engine operating, the propeller having been removed from the left engine prior to takeoff. Although the Aero Commander normally breaks ground in about 600 feet of runway, the pilots, Bert Bantle and E. R. Morris, accelerated the plane slowly, lifted it off the ground only after using 2,700 feet of runway.

Average ground speed for the flight was 148 miles per hour. The

plane arrived over Washington about eight hours later. Fuel consumption had been 13.6 gallons per hour.

Performance Stressed

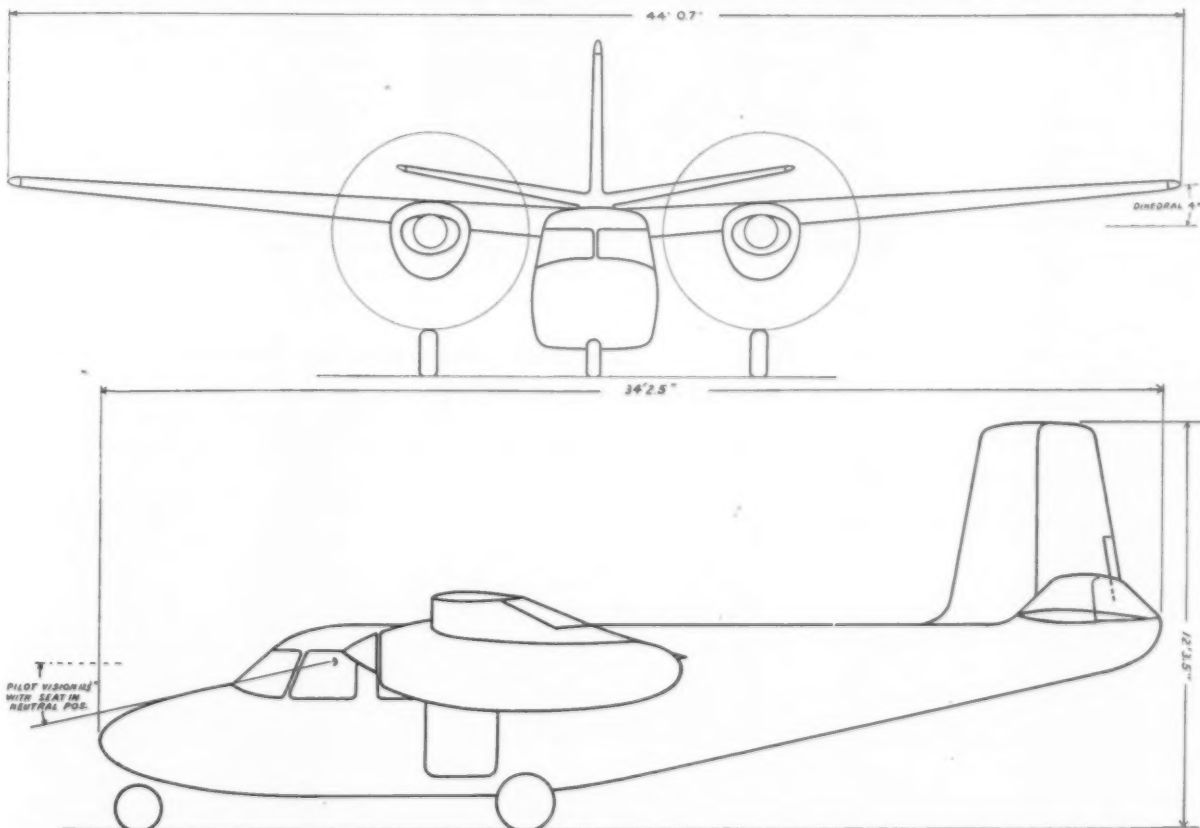
The design team that developed the Aero Commander has always stressed the plane's performance. This performance has accounted for 21 Commander sales already contracted, prior to completion of the first production model. All of these sales have been to individuals or business firms but the U. S. Air Force has been looking at the design as a possible twin-engined trainer and there is some hope that the plane will interest the local service airlines for certain routes. The company has materials on hand and engines promised for the first 40 aircraft,

beyond that production depends on availability of materials for this class of aircraft.

The first production Aero Commander will be off the line in June and certification tests will be started in July at 4,800 pounds' gross weight. By September production is expected to be at a rate of two aircraft a week. This means that the company's on-hand materials will only take it to the first of the year unless additional materials are made available.

Production facilities to handle this flow include some 40,000 square feet of shop space at Tulakes Airport, Oklahoma City. Current employment there is 160. The factory is set up with fixed jigs for rapid assembly work, a 1,000-ton hydro press, heat-treating facilities, etc. Typical of the production methods is a process which provides for almost complete machine riveting of the aft section of the fuselage rather than hand riveting.

The production model 520 Aero Commander will incorporate many substantial improvements over the prototype model. The new geared Lycoming GO-435-C2 engines, each

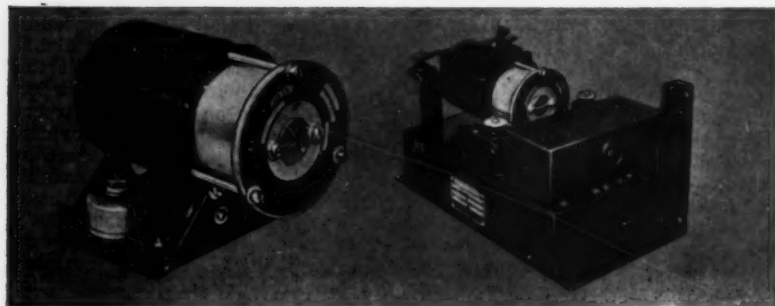


NEW LOOK for the Aero Commander production model is shown in this two-view drawing just released. Major differences over the prototype include the redesigned engine nacelles, longer and wider fuselage. General aerodynamic cleaning has cut the drag of the

production Commander 6% below that of the prototype. This model will use the Lycoming geared 260-horsepower engine, Hartzell full-feathering propellers, 150-gallon fuel system and many other design refinements.

What's doing at JACK & HEINTZ

Voltage Regulators Feature Frictionless Operation



New Jack & Heintz frictionless-operated voltage regulators GR 28 (left) and GR 86 (right). Both withstand environmental conditions of vibration, salt spray, sand, dust, humidity and fungus.

Sacred Cows don't get in the way!

J&H creative engineers are trained to start where the book leaves off. They are encouraged to take initiative and responsibility. They follow projects through development, testing and pilot production. This completely integrated engineering function gives J&H both agility and flexibility. *It gets at your problems quicker, puts working prototypes in your hands faster.*

More than 400 models among J&H Rotomotives

Starting with a production of only two major products during the last war, Jack & Heintz now offers more than 400 models of Rotomotive equipment.

In just one of these devices there may be more than 1,000 parts. A single part sometimes requires 30 to 40 separate operations performed entirely within our own plant where we can maintain J&H standards.

In addition to starters, generators, motors and similar rotating devices, J&H power systems and controls represent a field in which we are a leader.



BOTH AC & DC MODELS READY

Voltage creep is prevented and regulation improved by a frictionless regulating spring action used in two Jack & Heintz regulators just announced.

The GR 28 voltage regulator is a 90-watt, DC, carbon-pile type. It will regulate the output voltage of 30-volt, direct-current generators over their speed and load ranges. A second winding provides paralleling action for two or more generators supplying a common load bus.

The GR 86 aircraft voltage regulator is designed for continuous control of 120/208-volt, three-phase alternators. An adjustable voltage range of $\pm 5\%$ of nominal voltage is provided. Voltage regulation is maintained over a frequency range of 320-480 cycles.

Other features of both models include lightness and greater heat dissipation, improved temperature compensation, ruggedness to withstand extreme vibration, and a high-force regulator magnet that permits use of a high resistance carbon pile.

Chief Engineer's Corner

Some carbon-pile regulators work better and longer than others. That's about the most a lot of engineers will say for them, other than that nothing better has come out—yet.

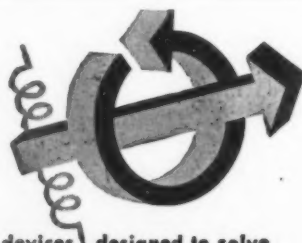
If you're one of those people, here's a thought: The GR 28 and GR 86 are good regulators. We don't know of any better. But even they will work best with generators, inverters

and systems that are most compatible with them. Maybe, by taking hold of both ends of this problem, we can make you happier about voltage regulators—even with carbon piles. Or, if you would rather have static regulators, we have several new models developed that are now in use.

Jack & Heintz . . . Cleveland 1, Ohio

JACK & HEINTZ
Rotomotive
EQUIPMENT

means electrical, hydraulic or mechanical devices designed to solve unusual problems of developing power, controlling it, or using it



rated at 260 takeoff horsepower, have now had some 150 hours' operation in the prototype and will be used in production aircraft. These engines provide substantially better performance than the 190-horsepower engines which powered the prototype during the first 500 hours of aircraft operation.

Another major contribution will be provided by a Hartzell constant-speed, full-feathering propeller, now under test by Hartzell, scheduled as standard equipment on the 520. Tests have shown that full-feathering propellers will permit a 20-mph increase in indicated airspeed as contrasted with a windmilling propeller in the event of an engine failure. It also permits a 450-foot-per-minute rate of climb at sea level under these conditions.

The 520's fuselage will be 14 inches longer than that of the prototype and the cabin about four inches wider. This means there is about 102 inches between the face of the instrument panel and the rear cabin bulkhead providing additional space for improved passenger seat spacing or greater baggage storage area.

Less Drag

With the fuselage and nacelle redesign there will be a 6% improvement in airplane drag, wind tunnel tests show. The nature of this aerodynamic cleaning up is noticeable in the accompanying newly released drawings.

Along with these changes will come a raising in fuel capacity from 104 to 150 gallons, upping of the gross weight from 4,600 pounds to 4,800, use of a Bendix PS5 pressure carburetor, etc.

The design group is particularly proud of the fuel system which, although it uses five tanks, has only one loading point and which makes all fuel available to either or both engines. Each engine has an engine-driven fuel pump with built-in relief valve as well as two electrically driven, submerged fuel booster pumps provided for emergency operation. The engine is rated for either 91 or 98 octane fuel with pressure carburetion and work is being done to get similar approval for the float-type carburetor used on the prototype.

Airline-Type Features

The fuel system and full-feathering propellers are typical of the ways in which the relatively small Commander provides airline-type reliability. The 25,000-BTU, combustion-type heaters (either Stewart Warner or Surface Combustion types being suitable) is another. Blowers are provided for ground operation of the heating system. In addition to providing for cabin heating, defroster tubes are programmed to help keep the windshield clear of fog and ice.

Other deicing protection provided



AERO COMMANDER over the Potomac River at Washington, D. C., at the end of its 1,160-mile flight from Oklahoma City on one engine. Note inoperative engine with propeller removed (arrow). Taking off at full gross weight, the plane made the trip in a little over eight hours, making a ground speed of 147 mph. On landing, the plane had enough fuel left to fly to Boston.

includes an electrically heated pilot head for the airspeed system and an alternate source of induction system air in the engine accessory section in the event the air scoop ices up. Discussions are now under way with deicer boot manufacturers regarding the possibility of providing pneumatic wing and tail deicing as optional equipment.

The \$45,000 basic price of the Aero Commander includes complete vacuum-driven gyro flight instru-

ments, a standby electrically driven turn-and-bank instrument and Lear ADF and VHF communications equipment. While the prototype uses a venturi for the gyro instrument vacuum source, the production model has engine driven vacuum pumps. The aircraft is arranged to use a Lear L-5 autopilot as optional equipment.

Hydraulic System

The Aero Commander uses a 1,000-pound pressure hydraulic system to actuate the landing gear, brakes and wing flaps. A study is now being made to determine the possibility of providing hydraulic nose wheel steering.

Electrically, the small transport is provided with a 24-volt system with one Eclipse 50-ampere generator as standard equipment and a second one optional. In addition to supplying the operating load, this generator supplies a 34-ampere-hour battery via a Leece Neville voltage regulator and reverse current relay. Other electrical equipment includes an Eclipse electric starter and a navigation light flashing mechanism.

Another major change in the production aircraft is the provision of an airline-type control column, completely forward of the instrument panel, instead of the push-pull arrangement which passes through the instrument panel as now used. The control column uses chain and sprocket drive above the floor level connecting into a straight cable system below.

Several different seating arrangements are available in the Commander. The pilots' seats, while not adjustable vertically, have four inches fore-aft movement. All seats are stressed for 9 G's.

Aero Commander 520

Specifications

Gross Weight, lbs.	4,800
Empty Weight, lbs.	2,900
Fuel Capacity, gals.	150
Maximum Speed, rated power, sea level, mph.	206
Cruising Speed	
75% rated power, S. L., mph.	183
70% S. L. power at 10,000 ft., mph.	197
Rate of Climb	
2 eng. at takeoff power, S. L., fpm.	2,012
1 eng. at takeoff power, S. L., fpm.	600
Service Ceiling	
2 eng., ft.	24,000
1 eng. (windmilling prop), ft.	8,700
1 eng. (feathered prop), ft.	11,000
Takeoff Distance over 50-ft. Obstacle, zero wind, ft. ...	950
Stall Speed at Sea Level	
Full flaps, power off, mph. ...	57
Flaps retracted, mph.	63
Full flaps, power on, mph. ...	40
Power Plant ..(2) Geared Lycoming GO-435-C2	
Takeoff Rating (5 minutes), hp.	260
Normal Rated Power, hp.	240
Engine RPM (at normal rated power)	3,000
Propeller RPM (at normal rated power)	1,925

Super DC-3—Money-Making Workhorse

... Capital Compares Operations After 5,000 Hours

By WILLIAM D. PERREAULT

CAPITAL Airlines has now accumulated more than 5,000 hours of operating experience with the Douglas Super DC-3. As the only operator of the postwar version of the airline workhorse, Capital's experience with the Super DC-3 should be of interest to both large and small airlines. Some highlights of this experience:

- **Capital's Super DC-3's** net about 15c per airplane mile more than the DC-3's on equivalent operations.

- **Operating over 35 mph faster** than the DC-3, carrying 10 more passengers and grossing 6,000 pounds higher, the Super DC-3 burns less fuel per airplane-mile.

- **Passenger acceptance** has been very good. Passengers per plane-mile run consistently higher than in the DC-3, higher than can be accounted for by the difference in seating capacity alone.

- **Pilot comment:** "It's a damn fine piece of equipment, so far superior to the DC-3 that there is no basis for comparison."

The latter statement reflects an attitude toward the Super DC-3 which Douglas has been trying to sell but which the uninitiated have not accepted. The Super DC-3, they claim, is not simply a modified DC-3. It has all the aspects of a new aircraft including its operating characteristics and economics.

This also means it has all the aches and pains, particularly in maintenance, which are related with initial operation of a new aircraft and engine. Problems with the high-performance Wright 1820 C9HE engine have been particularly acute, followed by the brake and minor structural problems. Each of these problems has been partially relieved but have yet to be cured.

The profit and loss statement is the final judge of any aircraft operation. Shown below are comparative direct and indirect operating costs, revenue and profit or loss per plane mile with the Super DC-3 and regular DC-3 for March of this year. During this month Capital operated three Super DC-3's and 24 DC-3's.

(Per Plane Mile)	Super DC-3	DC-3
Revenue	\$1.2253	\$.8427
Flying operations costs .....	.3335	.2998
Maintenance* .....	.1177	.0836
Depreciation .....	.1560	.0160
CAB direct operating costs .....	.6072	.3994
Contributions and indirect expenses .....	.6181	.4433
Indirect costs .....	.5468	.5224
Profit .....	.0713	—0.791
Miles flown, March ...	104,351	745,445

* Includes two engine overhauls as part of a \$7,000 total cost.

It can be seen that both direct and indirect operating costs of the Super DC-3 per airplane-mile are higher than those of the DC-3, yet additional revenue of the newer aircraft is

enough to result in a profit of 7c per plane mile while the older airplane operates at a loss of almost 8c per plane mile.

Even this is not a true picture of the aircraft's operations cost. Capital has about \$275,000 per airplane tied up in each Super DC-3. This is being depreciated over a five-year period. The DC-3, with the exception of modifications and other minor matters, is fully depreciated. Thus the Super must earn 14c per plane-mile more than the DC-3 on this one item alone.

The higher cost of the equipment is also reflected in insurance coverage. The Super costs about 2½ cents more per airplane-mile to insure than the older aircraft. If insurance and depreciation is cancelled out to determine how the two aircraft compare on operationally comparable footing, the 20c differential in direct operating costs, shown in the chart, is reduced to a 4c differential. Even with depreciation and insurance accounted for, the Super DC-3 is netting 15c per mile more than the DC-3.

Half-Hour Hops

Capital flies the Super DC-3's on route 51, Washington-Norfolk-Memphis, with some 11 stops. The average hop is 35 minutes. Three aircraft total 4,600 miles per day with a total of 44 landings. One plane makes 22 of these landings each day. Average speed—total miles divided by flight



CAPITAL AIRLINES' Super DC-3.

hours—is 178 miles per hour. Cruising air speed at 55% engine power is about 205 mph. This 178-mph speed contrasts with 129 mph for the DC-3 computed in the same manner.

Current Super DC-3 utilization is 8 hours 31 minutes per day. DC-3 utilization is 7 hrs. 30 min., DC-4 utilization 9 hrs. 36 min. and Constellation time 6 hrs. 15 min. Super utilization is dictated by route structure and scheduling. One of the three aircraft is in the WNA hangars five hours each day, the second 14 hours and the other, when not flying, bases overnight in Memphis to start a morning schedule.

An interesting picture of aircraft utilization and related factors is available in these March figures:

	Super DC-3	DC-3
Hours flown	634.06	5,755.52
Load factors (passenger)	62.05	58.23
Passengers per plane mile	19.2	13.1
Air speed, mph.	164*	129
Airplane-miles flown..	107,600	752,000
Gasoline burned (gals.)	78,276	567,000
Miles per gallon	1.375	1.329

* Since March this figure has been moved up to 178 by use of slightly higher engine power. Even so, at 164 it was 27% above the DC-3.

Both performancewise and economically the Super DC-3 outdoes the DC-3. While the plane is new in performance, economics and maintenance problems, pilots find no problem in transition from one plane to the other. Capital gave each pilot eight hours' ground school and five hours' flight time in the transition program. Some pilots, Capital states, were ready to check out after one hour in the plane.

The pilots are particularly pleased with the improved controllability of the Super DC-3. Engine failure, even during takeoff, presents no control problem, the pilots report. In a power-on stall there is still good lateral control as the aircraft drops away.

Most critical airport on Capital's list on route 51 is at Ashville, N. C., at 2,100-foot altitude, with a 4,000-foot runway and some wind restrictions. Actually, three of the airports used by the Super DC-3 are 4,000 feet in length. Ashville is the only spot where operating restrictions are imposed. There the 31,000-pound gross weight of the Super is cut to 30,000 with zero wind, 30,500 with 10 mph wind and back to 31,000 with 15-mph wind.

Mechanical delays and unscheduled removals per thousand hours of operation are slightly higher with the Super DC-3 than with the DC-3. This reflects the newness of the equipment in airline operation. While the rate per 1,000 hours' operation is noticeably higher with the Super,

it should be remembered that the newer aircraft covers about 30% more miles in the same period. Delays and removals per mile might present a more accurate picture.

	Mechanical Delays (per 1,000 hours' operation)		Unscheduled Removals	
	Super DC-3	DC-3	Super DC-3	DC-3
Jan.	53	22	192	118
Feb.	35	23	140	114
Mar.	38	27	148	105

The maintenance history of the Super DC-3 is best reflected in this chart showing the six months average of man-hours per inspection on the two aircraft:

	Super DC-3	DC-3
Number 2 Check		
Aircraft	33	11
Engines	26	11
Total*	64	24
Number 3 Check		
Aircraft	68	49
Engines	49	42
Total*	127	94
Number 4 Check		
Aircraft	95	75
Engines	63	49
Total*	171	135
1,000-Hour Check		
Total	433†	261

* Total includes instrument and radio maintenance not itemized.

† Only three 1,000 hour inspections have been made to date.

Both in routine servicing and in the overhaul shops the engines have been the biggest problem. Capital is getting 900 hours between overhauls on the Wright R-1820 C9HE engines. Overhaul cost per flight hour is \$4.20, reflecting in part an average of 499 man-hours required for each overhaul. On the most recent overhaul this figure was cut to 463 hours but is still abnormally high. This is based on only seven engine overhauls and includes a large factor for learning.

With the old series R-1820 Capital accomplished overhauls with only 250 man-hours and is confident the figure for the new engines will be cut back to 275 man-hours. Principal source of time accumulation is in disassembly and inspection and in nacelle build-up.

Trouble with the automatic feathering system and valve troubles causing cylinder changes have been the two main sources of engine trouble. Automatic feathering is used to improve operating characteristics of the aircraft in the event of engine failure during takeoff. With automatic feathering the maximum gross weight is 31,000 pounds, without it 29,325 is the maximum gross.

Feathering Troubles

Oil leaks and faulty feathering valve operation (in the engine) have

caused a high rate of accidental engine propeller featherings. The pilot can by-pass the automatic feathering circuit and prevent any possibility of malfunctioning but this results in a sizable cut in payload as indicated above. This item is now being given prime attention by both Capital and Wright Aeronautical Corp.

Next in the order of engine difficulties has been valve and cylinder failures. During the engine's early service life Capital experienced an engine failure every 150 hours of operation. This is now down to one every 400 hours but is still much too high. Two major fixes are being tried. Capital is service testing engines with a 37½-degree floating valve seat and others with 45-degree fixed valve seats. One failure with the 45-degree valve seat has already occurred at 238 hours' time.

The Super DC-3 was the first commercial transport to be equipped with the crosswind landing gear. Good-year, Capital and Douglas worked out a program for installation of the crosswind gear on all three Capital ships. Through no fault of the Good-year unit, after nine months' Super DC-3 operation, the gear is still not in use as a swivel gear. Capital keeps the gears locked in normal position.

Purpose Defeated

In theory, and in practice, the crosswind gear permits an aircraft to land with high crosswind components, making it possible to operate into airports which might not otherwise be served under certain wind conditions. Without the crosswind gear the DC-3 is allowed a 20-mph crosswind. At first CAA restricted the crosswind-gear equipped DC-3 to an 18-mph crosswind component, defeating its design purpose. Later this was raised to 20 mph.

CAA bases its stand on the fact that the plane has not proved its operating characteristics with this gear under higher crosswind conditions.

The higher landing weight and speed of the Super DC-3 has resulted in some problems with its "single-disc" brakes but these were to be expected. The high number of landings per day (44) also contributes to the brake difficulties but these are being worked out. The airplane uses two discs, one on each side of each wheel, per gear and three pressure pistons.

Other maintenance problems have included some tailwheel centering difficulties (since corrected), cracking of the wing skin on the underside outboard of the outer wing attach points (now beefed-up) and a requirement for strengthening of the structure where the horizontal stabilizer attaches to the fuselage.

Airlines Gain in Extending Overhaul Times

AIRLINES are still looking for a formula which will tell them when it is safe to extend the overhaul time on aircraft engines, propellers and accessories. During 1950 they came much closer to their goal. Progress was marked primarily in an industry-sponsored program by three airlines: United Air Lines, American and Trans World Airlines.

The program is known as the Maintenance Standards Plan. The three airlines designated to operate this experiment in establishing overhaul periods started in mid-year, each with its own system.

As a result the participating airlines, working through the Air Transport Association, drew up one plan incorporating the best points of the three initial plans. This plan is now in the hands of CAA for unofficial study and approval.

Limits Established

These systems depend on establishing certain flag limits, failure rates per 1,000 hours' unit operation, which are used to warn the operator if the unscheduled removals occur too frequently or to provide factual data that will justify increasing the service life of components.

Within the next year or 18 months all scheduled airlines will probably be operating on a single maintenance standards plan. Meanwhile, the overhaul times on all units, whether engines and propellers or such items as a minor hydraulic system component, are dictated by a portion of the operations specification which lists the approved overhaul time of all components.

Even so, a review of 1950 engine and propeller overhaul times, major factors in determining the maintenance and overhaul costs of big and small operators alike, shows that virtually every airline has obtained 100-200 hours' time extension for engines and proportionate improvements in propeller overhaul as compared with the 1949 period.

The highest engine overhaul period remained at 1,500 hours but, whereas this only existed for one airline and one engine last year, several airlines had 1,500-hour periods on several different engine types in 1950.

In the propeller overhaul program, maximum time between overhauls is dictated, to a large degree, by engine overhaul times. In order to keep engine and propeller changes together, propeller times are kept at multiples of the engine overhaul times. Thus while a propeller may be ready for a 200 to 400-hour increase in overhaul time no change is made until it can go another full engine overhaul

period. This may mean 1,500 hours.

This condition, exemplified by the propeller overhaul extension method, is typical of all engine accessories. With few exceptions hydraulic

pumps, generators, starters, tachometers, fuel flow meters, carburetors, etc., are also given extensions in overhaul times at multiples of the basic engine times.

Engine Overhaul Periods in Hours

For U. S. Air Carrier Aircraft in Scheduled Operation—1950

(Model Numbers in Parentheses)

Operator	Pratt & Whitney				Wright Aeronautical	
	R-985	R-1830	R-2000	R-2800	R-4360	R-1820 R-3350
All American	(-90D) 1,000					
American						
Bonanza	(-92) 1,000					
Braniff	(-92) 1,000	1,200	1,000			
Capital		(-7) 1,200				(C9HE) (BA-3) 900
Central	(-92) 800					
C&S	(-90D) 1,050	(-9M3) 1,100			(C9GC)(C9HD) 1,250 1,300	(BD-1) 1,100
Colonial		(-11C) 1,200			(G-102) 1,125	
Continental	(-92) 1,250		(CA-18) 1,000			
Delta		(-9M3) 1,200	(CA15) 1,200		(G-202A) 1,200	
Eastern		(D5) (-7) 1,300 1,100			(G-202A) 1,200	(BD-1) 1,225
Frontier	(S1C3G) 900					
Flying Tiger		(-7) 1,200	(-75) 1,000			
Hawaiian						
Lake Central	(-90D) 700				(G-202A) 1,150	
Mid-West ¹						
National		(D3) 1,300	(CA-15) 1,100			
Northeast	(-92) 1,100		(CA-18) 1,100			
Northwest		1,500	1,400	(TSB-36) 900		
Piedmont	(-90D) 1,000					
Pioneer					(G-102) 1,000	
Slick			(-75) 1,000			
Trans Texas	(-90D) 1,000					
TWA	(S1C3G) 1,500	(-9) 1,500	(CB-16) 900		(C9GC) 1,500	(BD-1) 1,400 (BA-3) 1,100
United	(S1C3G) 1,300	(-11C) 1,500	(CA-15) 1,400	(TSB-36) 800		
Western	(S1C3G) 1,300	(-11C) 1,100	(-75) 1,200			
Wiggins ²						
Wisconsin Central	1,000					
West Coast	(-92) 950					

¹ Mid-West overhauls Continental W-670-23 @ 750 hours

² Wiggins overhauls Jacobs L4MB at 650 hours

Propeller Overhaul Periods in Hours

For U. S. Air Carrier Aircraft in Scheduled Operation—1950

	P&W R-1820 HS 23E50	P&W R-2000 HS 23E50	P&W R-2800 HS 2H 17AA3-48R	P&W R-2800 HS 43D60	P&W R-4360 Curtiss C-644	Wright 1820 HS 23E50	P&W R-2800 HS 23E50	Cont'l W670-23 HS 2E20	P&W R-2800 HS 23E50	P&W R-985 HS 22D30	Wright R-3350 BD-1 HS 33E60	Wright R-3350 BD-1 HS 43E60	P&W R-4360 HS 23E60	P&W R-2800 Curtiss C6325B
All American	2000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
American .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bonanza	2000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Braniff	2000	2400	.....	1000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Capital* .....	.....	1200	.....	.....	.....	1100	.....	.....	.....	.....	900	.....	.....	.....
Central	1600	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
O & S .....	.....	2200	.....	.....	.....	2600	.....	.....	.....	.....	.....	1100	.....	.....
Colonial .....	.....	3600	.....	.....	.....	3375	.....	.....	.....	.....	.....	.....	.....	.....
Continental	2500	.....	.....	.....	.....	.....	.....	.....	1000	.....	.....	.....	.....	.....
Delta .....	.....	2400	.....	1200	.....	2400	.....	.....	.....	.....	.....	.....	.....	.....
Eastern .....	.....	2600	.....	.....	.....	2400	.....	.....	.....	.....	2250	.....	.....	.....
Empire	2100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Flying Tiger .....	.....	2400	.....	.....	.....	.....	2000	.....	.....	.....	.....	.....	.....	.....
Frontier	1800	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lake Central	700	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mid-Continent	2300	.....	.....	.....	.....	.....	.....	.....	2000	.....	.....	.....	.....	.....
Mid-West .....	.....	.....	.....	.....	.....	.....	750	.....	.....	.....	.....	.....	.....	.....
National .....	.....	2600	.....	2200	.....	2300	.....	.....	.....	.....	.....	.....	.....	.....
Northeast	2200	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1100
Northwest .....	.....	3000	.....	.....	.....	.....	1400	.....	.....	.....	.....	.....	900	.....
Piedmont .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Pioneer	2000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Robinson .....	.....	.....	.....	.....	.....	2000	.....	.....	.....	.....	.....	.....	.....	.....
Slick .....	.....	.....	.....	.....	.....	.....	2000	.....	.....	.....	.....	.....	.....	.....
Southwest	3300	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Trans-Texas	2000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
TWA .....	.....	.....	.....	900	.....	3000	.....	.....	.....	.....	2000	1400	.....	.....
United	3900	3900	.....	2800	1000	.....	.....	.....	.....	.....	.....	.....	.....	.....
Western	3900	4000	1400	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Wis. Central .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1200	.....	.....	.....	.....
West Coast	1900	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

*Capital overhauls 23E50 for R-1820 C9HE @ 900.

HS—Hamilton Standard models. Cont'l—Continental Motors.

Source: AMERICAN AVIATION Survey

1950 Direct Operating Costs—U. S. Scheduled Airline Transports

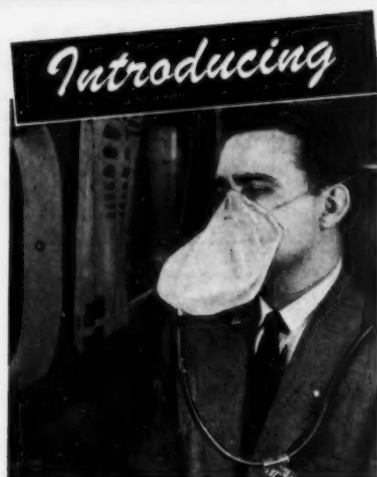
Editor's Note: Direct operating costs shown here compiled by survey of the airlines by AMERICAN AVIATION. The figures make interesting general comparisons but are not suitable for comparing the operating costs of two airlines using the same equipment. Such a comparison requires detailed information on the nature of depreciation, specific routes flown, general type of operation, major equipment modifications, etc.

Airline	Douglas DC-3	Douglas DC-4	Douglas DC-6	Convair 240	Martin 2-0-2	Lockheed Connie	Boeing 377	Curtiss C-46
All American	50.66	.....	.....	.....	.....	.....	.....	.....
American .....	.....	91.1	78.1	68.6	.....	.....	.....	.....
Bonanza	38.72	.....	.....	.....	.....	.....	.....	.....
Capital	38.29	74.72	.....	.....	.....	101.74	.....	.....
Empire	44.14	.....	.....	.....	.....	.....	.....	.....
C & S	34.15	72.91	.....	.....	.....	124.34	.....	.....
Colonial	50.50	89.	.....	.....	.....	.....	.....	.....
Continental	31.59	.....	.....	64.80	.....	.....	.....	.....
Delta	34.39	63.60	86.61	.....	.....	.....	.....	.....
Lake Central	40.25	.....	.....	.....	.....	.....	.....	48.90
Mid-Cont.	31.90*	.....	.....	70.86	.....	.....	.....	.....
Mid-West ¹ .....	.....	.....	.....	.....	.....	.....	.....	.....
National .....	.....	67.16	77.71	.....	.....	.....	.....	49.80
Northeast	48.08	167.46	.....	89.46	.....	.....	.....	.....
Northwest .....	.....	63.93	.....	.....	79.98	.....	178.27 (Dom.)	.....
Piedmont	43.09	.....	.....	.....	.....	.....	.....	.....
Pioneer	37.23	.....	.....	.....	.....	.....	.....	.....
Slick .....	.....	.....	.....	.....	.....	.....	.....	35.71
Southwest	34.69	.....	.....	.....	.....	.....	.....	.....
Trans Texas	36.48	.....	.....	.....	.....	.....	.....	.....
TWA (Dom.)	38.97	96.54	.....	.....	90.82	94.62	.....	.....
United	60.P	98.P	.....	.....	.....	.....	.....	.....
.....	59.C	80.C	102	.....	.....	.....	246.	.....
Western	32.41	71.26	.....	55.09	.....	.....	.....	.....
Wiggins ² .....	.....	.....	.....	.....	.....	.....	.....	.....
West Coast	43.93

* DC-3's fully depreciated

¹ Cessna 190's at 19.3

² Cessna T-50 at 24.8



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Trained Personnel Reservoir Missing as Airline Needs Grow

At year's end the airline personnel program was tightening up. For the first time in many years virtually none of the airlines had experienced the winter season lay-offs which airline personnel have learned to dread. While this undoubtedly improved airline employe relations, it also presented some problems.

Spring and summer traffic peaks, plus new equipment, are bound to raise the personnel requirements above the winter levels. This year there is no reservoir of trained and "waiting personnel." The accompanying chart, which includes most but not all airlines, provides an interesting picture of airline pilot, mechanic and engineering employment at year's end.

The pilot situation will provide the most critical problem. Many first officers are in the military reserves, 90 days' delay is the most that has been obtained in recall of any of this group by the services.

Others, captains and supervisory personnel, are being attracted to key military positions even without actual recall.

While some maintenance men and engineers have been recalled to serve with the military services the over-all number has not been proportionately high. Trained engineers are finding more attractive openings offered in the military manufacturing industry and some losses can be expected with replacements hard to find.

One other factor which may have an important effect on over-all airline maintenance problems is the increasing number of four-engined aircraft operated by the airlines and requiring flight engineers. All of the Douglas DC-6A's and B's and Lockheed Constellations scheduled for delivery to the airlines will require flight engineers.

Operations-Engineering-Maintenance Employment

Scheduled U. S. Airlines—1950

Airline	Pilots	Maintenance	Engineering	Combined M & E
All American	62	90	1	91
American	756	2,772	80	2,852
Bonanza	16	25	0	25
Braniff	NA	.....	.....	.....
Capital	137	750	5	755
Continental	89	186	4	190
Empire	24	29	1	30
C & S	147	363	10	373
Colonial	79	106	2	108
Delta	234	517	11	528
Eastern	NA	2,254	38	2,292
Flying Tiger	190	575	3	578
Frontier	NA	131	2	133
Lake Central	44	22	1	23
Mid-Continent	NA	248	7	255
Mid-West	18	16	2	18
Central	9	50	0	50
National	180	NA	NA	NA
Northeast	82	196	4	200
Northwest	413	1,550	75	1,625
Piedmont	63	NA	NA	NA
Pioneer	89	91	4	95
Robinson	NA	30	1	31
Slick	183	395	4	399
Southwest	42	60	1	61
Trans-Texas	52	101	3	104
Trans World (Dom.)	711	2,450	23	2,473
Trans World (Int'l)	206	.....	.....	.....
United	780	1,386	104	1,490
Western	183	300	4	304
Wiggins	10	10	0	10
Wisc. Central	43	NA	NA	50
West Coast	27	21	0	21
TOTALS	4,869	14,724	390	15,354

TECHNICAL NEWS DIGEST

• **Colonial Airlines** completed its 21st year of safe operation last month having flown 387,933,105 passenger miles without a fatality or serious injury to a passenger or crew member. During this time the airline completed an estimated 522,294 landings and takeoffs and carried over 1,447,227 passengers.

• **A \$9,500,000 U. S. Air Force contract** for tow tugs has been awarded the American-Coleman Co. of Omaha, Neb. The American-Coleman "mules," for towing the Convair B-36 bombers, weigh 35,000 pounds, have a six-man cab and are powered by a 150-hp gasoline engine.

• **Lockheed Aircraft Service-International and El Al, Israeli National Airlines**, have signed an agreement under which LASI will handle U. S. maintenance for El Al at New York International Airport.

• **Eastern Air Lines** has contracted with Grand Central Aircraft Co. of Glendale, Calif., to handle 10,000-hour overhauls on five EAL Douglas DC-4's. The first of the five aircraft, the C-54 EAL recently purchased from CAA at \$355,000, is already in the shops. Planes will be handled one at a time.

• **California Eastern Airways** has signed a "lease-power" agreement with Pacific Airmotive Corp., Burbank, under which the PAC will provide the engines for CEA's C-54 operating in the Pacific airlift. PAC has similar "lease-power" agreements with Flying Tiger, Pacific Northern, Slick and Seaboard and Western.

• **Lockheed Aircraft Service-International** has added a new instrument repair and overhaul shop to its aircraft maintenance facilities at N. Y. International Airport. Since taking over the Willis-Rose Corp. 18 months ago LASI has doubled its shop area and installed some \$450,000 in new equipment.

• **Braniff Airways** has been awarded a 1950 Inter-American Aviation Award for flying 43,335,071 passenger-miles in 1950 on its Latin American routes without injury to passenger or crew member. The award was made by the Inter-American Safety Council in New York.

• **Lockheed Aircraft Service, Burbank, Calif.**, is overhauling the three Aerovias Brasil DC-4's which that airline bought from Chicago & Southern Airlines. Aerovias Brasil has been operating Douglas C-47's.

• **William E. Jackson, CAA radio engineer** credited by CAA as one of the "fathers" of the instrument landing system, has been made a Fellow of the Institute of Radio Engineers for his "technical contributions to electronic aids to air navigation and control and his administrative contributions to the CAA."

• **Seaboard & Western Airlines** reported 12 hours and 24 minutes daily utilization for its Douglas DC-4's during February. Figure covers all S&W planes used in both commercial freight operations and under contract to the U. S. Air Force.

• **CAA has granted the third foreign aircraft repair station certificate**, under its recently announced program in this field, to Swissair in Geneva. KLM Royal Dutch Airlines and BOAC were previously granted similar authorizations to make repairs and provide maintenance for U. S. registered aircraft on international routes.

• **Aeroquip Corp.** has received a \$380,740 USAF contract for aircraft hose, fittings and lines bringing its unfilled backlog to over \$10 million. Monthly shipments are now in excess of \$1 million, almost double the rate one year ago.

• **USAF's Air Research and Development Command** has developed a new expendable cargo parachute, known as the G-13, which will deliver 500 pounds load at plane speeds up to 175 mph. This contrasts with 300-pound limit at 150 mph speeds for current models yet the new chute costs only half as much as equivalent rayon chutes. Suitable for cluster use to do the work of a 64-foot nylon chute, the equivalent unit costs only one-fifth as much.

• **The first of five new CAA films** on aviation, "Safe Airmen" and "Safe Flight Operations," are listed in the new 1951 catalog of films and film strips now available on loan from the Office of Aviation Information, CAA, Washington 25, D. C.

Do you know:

What cost items are included in direct flying costs?

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What sections of an airline should be held responsible for maintenance irregularities?

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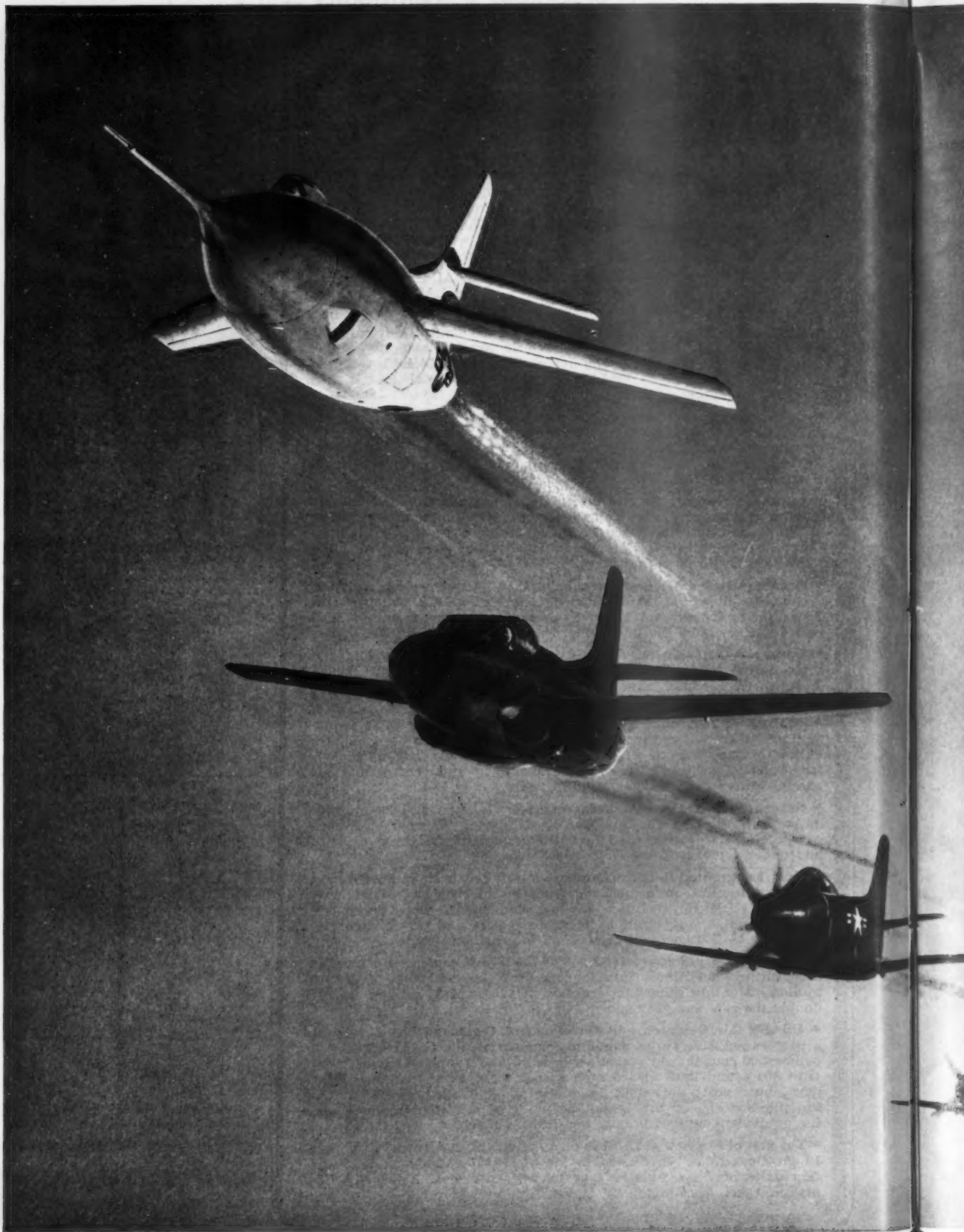


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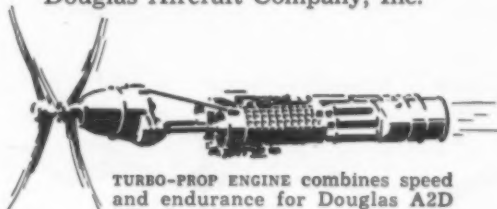
In 1950 the twin-jet F3D Skyknight was started down the production line at El Segundo, following enthusiastic reports from Navy test pilots.

Now being flight tested in preparation for line production is the A2D Skyshark, turbo-prop attack plane. And above Edwards Air Base the rocket-powered D-558-2 Skyrocket is thrusting its needle-nose into the thin air, looking for scientific data that will help build newer type aircraft still in the classified status.

By carefully manipulating the design, development and production of these diverse power types, the Navy and Douglas have arrived at a flexible, "balanced power" position from which our air strength can be increased without delay. Douglas Aircraft Company, Inc.



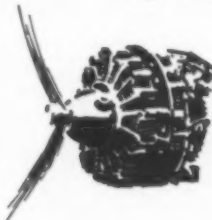
ROCKET ENGINE delivers supersonic speed for Douglas "Skyrocket" (top).



TURBO-PROP ENGINE combines speed and endurance for Douglas A2D "Skyshark" (third).



TWIN-JET ENGINE gives pure jet thrust for Douglas F3D "Skyknight" (second).



RECIPROCATING ENGINE provides work-horse efficiency for Douglas AD "Skyraider" (bottom).

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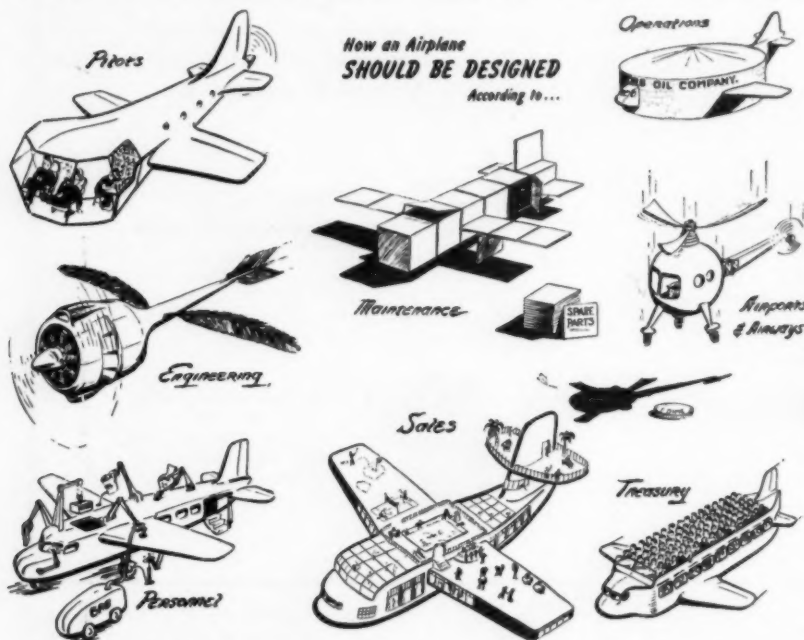
By William D. Perreault



SOME months ago we said some less than kind words about CAB's proposal to break the current aircraft and engine mechanic's ratings down into a maze of specialist ratings: a system under which the specialist "knows more and more about less and less until finally he knows everything about nothing." We are pleased to see CAB circulating a revised version of this proposal which eliminates these objectionable changes.

Wisconsin Central Airlines has adopted a plastic headrest cover for use in their new fleet of Douglas DC-3's. The headrest cover is a simple, rectangular flat piece, similar to some of the linen or cotton ones in use, held in place with an elastic band around the seat back. The plastic used by WIS has a colorful stripe, complementing the interior decoration of the aircraft, which would be impractical in a fabric. Eliminates washing and ironing costs and should prove very serviceable.

After returning from two annual meetings, the SAE's in New York and ATA's engineering-maintenance conference in Chicago, we were convinced that many of the airline departments were a little self-centered in their ideas on how the future aircraft should be designed to meet operational



needs. Picking up a copy of TWA's house organ, the Skyliner, we saw this perfect expression of the condition. We swiped it.

During the same period in which jet aircraft operations have increased from a point where they represented only 1/40th of all U. S. Navy operations to a recent date when they were 10% of all operations, the related accident rate has been reduced from a ratio of 4 jet accidents to 1 piston-engine accident to 1.4 to 1.

AMONG THE SUPPLIERS

R. H. Whempner, director of service engineering of the aeronautical division of Minneapolis-Honeywell Regulator Co., has been elected assistant secretary of the company . . .



Whempner

Air Associates, Inc., has leased a modern four-story building with 65,000 square feet of floor space in Orange, N. J., which will be used for the manufacture of the company's electronic equipment. A. E. Harrison has been named engineering manager . . . G. E. Campbell has been appointed assistant works manager and Donald A. Sutherland industrial sales manager of the Pesco Products Division of Borg-Warner Corp.

Lloyd L. Kelly has been named manager of Link Aviation's field office in Washington, D. C. . . . Minneapolis-Honeywell Regulator Co. has moved its Aeronautical Division to 2600 Ridgway Road, Minneapolis. . . . Westinghouse Electric Corp. has formed a new Air-Arm division to concentrate on production of automatic computers for gun and rocket fire, radar, autopilots and airborne armament systems in a new 400,000 square-foot Baltimore plant under the direction of Walter Evans, vice president.

Air Facilities, Inc., an Arizona corporation, in conjunction with Aircrafts-men Co., has leased the former Douglas

Melatron Corp. has named George A. Starbird to handle development of pressure actuated switches . . . Dr. Charles E. Monagan, Jr., has joined the Edo Corp.'s engineering staff . . . Murray S. Gelber, vice president of Garrett Corp., named vice president and manager of the AirResearch Manufacturing Co. of Arizona . . .



Gelber

Colin M. Stewart, since 1945 general manager of Compania Goodrich Cubana in Havana, is now a member of The B. F. Goodrich Co.'s Automotive, Aviation and Government Sales Division in Detroit.

Transocean Air Lines has organized a new unit known as the Talcem Division for distributing chemical specialties and cleaning compounds manufactured by Jackson Chemical Co., Los Angeles. Lloyd F. Coates has been named general manager of the new division which will have headquarters at 15890 Hesperian Blvd., San Lorenzo, Calif. . . . Bendix Radio Division of Bendix Aviation Corp. has named Henry B. Yarbrough manager of Air Force sales with J. Walton Colvin as his assistant, and Arthur B. Gittelman is the new manager of Navy and Signal Corps sales.

Army Air Base facilities at Bisbee-Douglas International Airport, which is owned and operated by Cochise County. Aircraftmen Co., working with Air Facilities, plans to transfer a large portion of its prime contracts on both aircraft components and guided missiles to the new facility.

Rheem Manufacturing Co.'s Aircraft Division has received a letter of intent from Northrop Aircraft for fabrication and assembly of components of the F-89 all-weather jet fighter . . . Burns Aero Seat Co. has added a new sheet metal department and has started sub-contracting for aircraft manufacturers . . . Ex-Cell-O Corp., is planning to build a \$1,000,000 factory in Lima, Ohio, to produce jet engine parts . . . Jack L. McGinnis has been named assistant works manager for Jack & Heintz Precision Industries.

Bendix Aviation Corp. has made appointments in three of its divisions: Harold W. Giesecke to assistant to the



Giesecke

Wolf

general manager of Bendix Radio Division; George A. Lewthwaite to general manager of the Pioneer Central Division and Charles A. Wolf succeeds Lewthwaite as sales manager of the Eclipse-Pioneer Division. Lewthwaite replaces W. W. Fisher, who became general manager of the Instrument Division of Daystrom, Inc.



Missile Unit—About the size of a milk bottle, this auxiliary power package incorporating a 60,000-rpm, axial-flow turbine has been developed by the AiResearch Manufacturing Co. of Los Angeles for use in guided missiles. A second source of power, it will operate such elements as stabilizers, air surface and guidance controls. In operation hot gases ignited in a gas generator power the turbine wheel which produces shaft power. An alternator and hydraulic pump convert the shaft power into electrical energy and hydraulic power. Unit, exclusive of the gas generator, is six inches in diameter, 11 inches long and weighs 16 pounds.

MAY 28, 1951



Hands that dwarf mountains



When the airman wings far out over the limitless seas, or in the dead of night above cloudbanks that hide the earth . . .

what confidence he must place in the accuracy and dependability of his aircraft instruments



and controls! Such confidence Kollsman has earned the world over through years of precision workmanship and engineering skill. Yes—when mountain tops must be dwarfed and sea lanes narrowed



—the hands of skilled Kollsman craftsmen have unflinchingly furnished the tools.

*for precision and dependability
look to* **KOLLSMAN**

INSTRUMENT CORPORATION

Elmhurst, New York • Glendale, California

NEW PRODUCTS



Miniaturized Amplifier Promises Radio Weight Cut

A miniaturized electronic amplifier developed by Bendix Radio Division promises to make possible major strides in reducing the size and weight of airborne radio communications and navigation equipment. Now being used in Bendix radar equipment, the new amplifier promises greater reliability through a major reduction, six to one, in the number of parts involved.

The new Bendix miniaturized amplifier is a band-pass type with a rated electrical gain of 130 decibels, equivalent to magnifying an electrical impulse several million times.

The true potential of the new amplifier in aircraft applications is best indicated by a comparison (see photo) of the old and new units. The old unit weighs 29 ounces, the new unit weighs two ounces. The old unit has 240 parts, the new unit only 35 component parts. Bendix claims that in large production quantities the new unit will be small enough to permit complete amplifier replacement in the event of a tube or other component failure. Plug-in design of the miniaturized amplifier will make this a simple operation.

The Bendix amplifier circuit techniques have reduced the number of capacitors and resistors used and thus assured more trouble-free operation.

Miniaturized tubes used in the new amplifier are smaller than a cigarette and are permanently wired into the amplifier. Overall size of the amplifier is not much more than the size of a package of cigarettes.

When contacting **Bendix Radio Division** of Bendix Aviation Corp., Baltimore 4, Md., please mention **AMERICAN AVIATION**.

Hand Pump

Three new-model, high-vacuum hand pumps for pumping gasoline and petroleum base products, alcohol, turpentine and other solvents have been introduced by the **Tokheim Oil Tank and Pump Co.** All three have bung adaptors with a vise-type screw which can be

tightened on the suction stub without a wrench or pliers. Suction stubs are galvanized and all metal parts not of stainless steel construction are Permolited to prevent corrosion. Model 970 has a non-drip discharge spout for filling cans and small containers, model 971 is equipped with an eight-foot static wire hose and UL-recommended vacuum breaker. Model 972 is similar to the 971 but with an eight-gallon flow meter. Each can be installed in 1½- and 2-inch bungs of drums and tanks. The pumps operate on both the backward and forward stroke dispensing 20 gallons per one hundred strokes.

When contacting the **Tokheim Oil Tank and Pump Co.**, Fort Wayne, Ind., please mention **AMERICAN AVIATION**.

Plier-Type Clamp

A new fast-acting clamp particularly suitable for general sheet metal work in aircraft assembly and repair is being marketed by **Detroit Stamping Co.** The portable plier-type toggle clamp, "De-Sta-Co" No. 424, provides positive

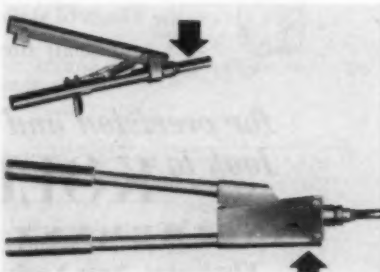


holding pressure with a firm toggle locking action. Weighs only five ounces, is suitable for one-hand use. Compactness (overall length is 4½ inches) allows use in restricted working area. Handles and jaws are forged high-alloy steel, bearing pins of stainless steel. When contacting **Detroit Stamping Co.**, 300 Midland Ave., Detroit 3, Mich. please mention **AMERICAN AVIATION**.

Cherry Rivet Tool

To increase utility of the Cherry Rivet hand guns several design and construction modifications have been incorporated in new models by **Cherry Rivet Co.** Division of Townsend Co. The G-11 gun, replacing the G-10, was redesigned to eliminate undue wear of the ratchet teeth caused by accidental release of the drawbolt. The triangular shaped trip plate, mounted above the lever pin, now prevents this release unless the handles of the gun are pulled apart. The G-36 gun (lower view) replaces the G-35 and employs screw-on type pulling heads interchangeable on other models.

When contacting the **Cherry Rivet Co.**, 231 Winston St., Los Angeles 13, Calif., please mention **AMERICAN AVIATION**.



Tow Banner

Tow advertising banners for light-planes, made of Lumite woven saran screen and measuring four feet wide are now being marketed by **Skysign Co.**

Made of 18 x 14 mesh screen in natural color, the tow banner will take about 25-27 letters which in the air stand out against the natural background. Letters are painted on the banner and after use can be washed off with a water hose. The banner is clamped to the carrier under the wing of the plane and after the airplane is airborne is unfurled by a rope in the cockpit. Complete unit sells for about \$190.

When contacting **Skysign Co.**, Clinton, N. J., please mention **AMERICAN AVIATION**.

Upholstery Scrubber

A mechanical upholstery shampoo scrubber weighing only 70 pounds and rapidly speeding up the cleaning of aircraft seats, rugs and other similar materials is being marketed by **Holt Manufacturing Co.** The Holt shampoo scrubber looks like a large tank-type vacuum cleaner. The working end of the hose mounts a special rotary brush which contains the shampoo flow control and safety switch. The shampoo solution is stored in the portable tank and fed to the brush by a heavy-duty bronze suction pump. A one-third horsepower



motor, mounted over the seven-gallon supply tank, drives the pump and rotates the six-inch brush at 250 r.p.m. Drying time is about 4-6 hours.

When writing **Holt Manufacturing Co.**, 651 20th St., Oakland 12, Calif., ask for the new bulletin describing the Holt Scrubber and please mention **AMERICAN AVIATION**.

Demagnetizer

An improved demagnetizing coil effective in demagnetizing materials and stabilizing magnetic flux has been announced by **General Electric**. Useful in equalizing and stabilizing magnetic flux in permanent-magnet assemblies that are used in electrical instruments and control devices. The unit consists of an air-core-coil built in a frame which can be bench mounted. The coil is rated at 115 volts, 60 cycles and equipped with switch, pilot lamp and flexible lead fitted with standard plug. Its rectangular opening is 4½ inches x 8½ inches making it possible to accommodate stock up to eight inches wide. Mechanically arranged to permit mass-demagnetizing via a conveyor-belt type arrangement or otherwise.

When contacting **General Electric**, Schenectady 5, N. Y., please mention **AMERICAN AVIATION**.

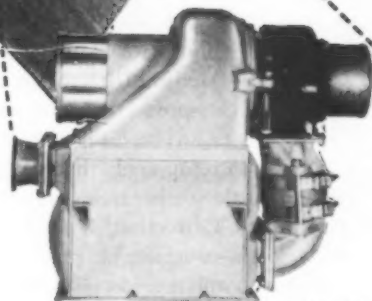
AMERICAN AVIATION

BLUEPRINT FOR EFFICIENCY

Cooling and pressurizing the modern fighter or bomber requires highly efficient equipment—equipment which makes optimum use of permissible space, weight and power allowances. The design of such equipment is a Stratos specialty.

Stratos has designed and placed in production a series of highly efficient refrigeration units with cabin air flows ranging from 10 lbs/min to 100 lbs/min. In many thousands of hours of service this equipment has earned an enviable reputation for reliability and long service life.

Designers will find compact, lightweight and efficient Stratos units require a minimum of redesign to fit their particular application, be it the cooling of a jet bomber or fighter or the pressurizing and conditioning of a modern transport's cabin.



*Stratos Air-Cycle
Refrigeration Package*

For information
on this and
other Stratos
equipment, write:



Stratos DIVISION

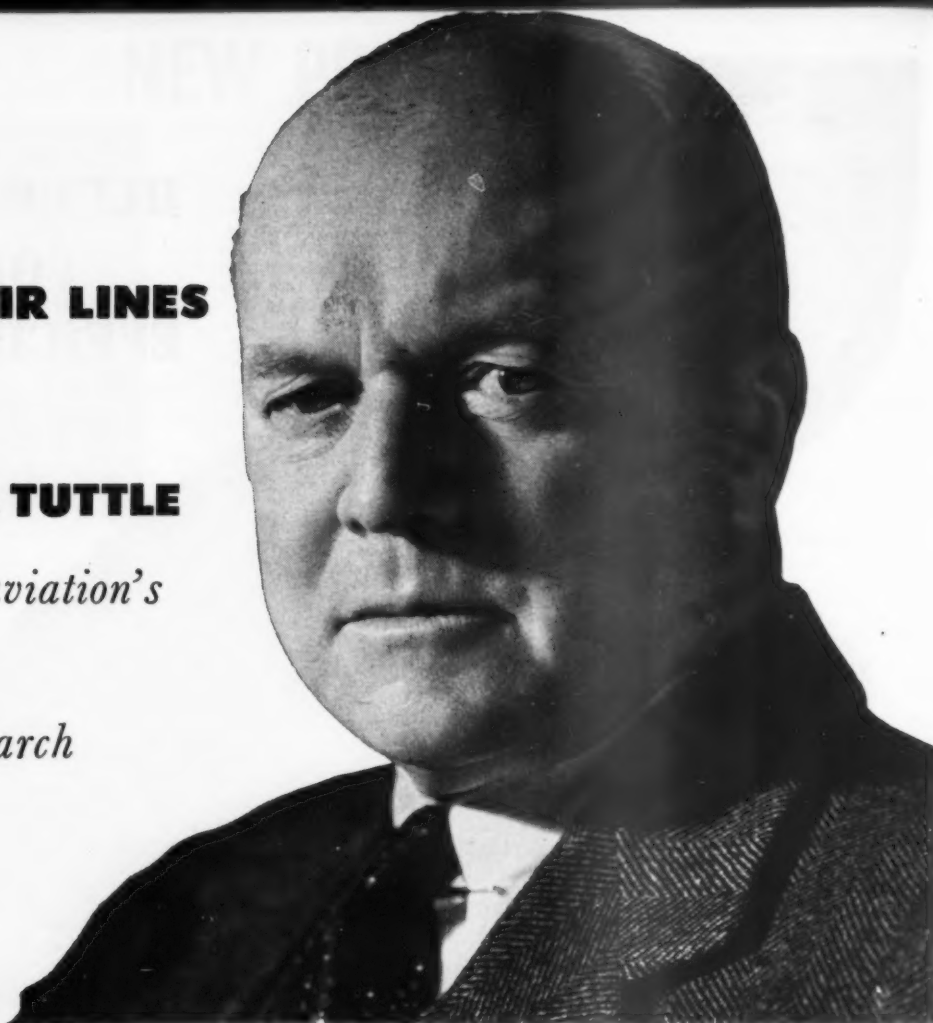
FAIRCHILD ENGINE & AIRPLANE CORP.

Main Office and Plant: Farmingdale, Long Island, N. Y. • West Coast Office: 1307 Westwood Blvd., Los Angeles 24, Calif.
Fairchild Aircraft Division, Hagerstown, Md. • Fairchild Engine and Guided Missiles Divisions, Farmingdale, N.Y.

UNITED AIR LINES SALUTES

COL. A. D. TUTTLE

*commercial aviation's
pioneer in
medical research*



On June 1, commercial aviation's pioneer in medical research retires. He is Colonel A. D. Tuttle (M.D.) who, in his 14-year association with United Air Lines as Medical Director, has been active in promoting and administering many medical techniques and developments that are now in gen-

eral use throughout the airline industry.

Under Col. Tuttle's direction, United was the first airline to develop a program of preventive medical care for its employees and medical research for increased passenger comfort, and to apply the practical aspects of military aviation medicine and research to the principles and practice of commercial aviation. Respected both in and out of the industry, Colonel Tuttle holds the John Jeffries Award of the Institute of Aeronautical Sciences for "outstanding contributions to the advancement of aeronautics through medical research."

Prior to his airline career, Col. Tuttle served with General Pershing's staff during World War I, supervised the reorganization of the U.S. Army Medical Department, and served as commandant of the Army School of Aviation Medicine at Randolph Field, Texas. His military decorations include the U.S. Distinguished Service Medal, the French Legion of Honor and the Belgian Order of Leopold. He is a member of many medical societies, president of the Aero Medical Assn., a past president of the Airlines Medical Directors Assn. and was recently awarded a plaque by the Founders Club, for founding the latter organization.

United Air Lines salutes Colonel Tuttle for his long and distinguished service in air transportation. He has assisted greatly in the growth and development of United and the industry.



AMERICAN AVIATION

CAP-NAL Interchange Promotes Long Haul

Incentive for Offline, Slack-Season Selling

By WILLIAM V. HENZEY

CAPITAL Airlines and National Airlines have devised a plan for sharing revenue from interchange operations which could, because of its sales-incentive features, become standard in the interchange-conscious airline industry.

Now employed by the two lines in a through-plane service between Detroit, Washington and Miami, the plan gives each party an opportunity to share in the profits from interchange operations conducted over the other party's routes, thus serving as a spur to sales personnel to fill every seat over every mile of the flight.

It works this way. The aircraft lessor receives a fixed rate per mile largely made up of direct operating costs for operations over the lessee's route. The lessee, in turn, receives a fixed rate per mile based largely on ground costs.

Excess revenue over the amount necessary for settlement of the fixed rate charges is then split on the basis of 55% for the lessee and 45% for the lessor.

Planes Follow Seasons

The percentage advantage always goes to the lessee on the theory that he owns the routes and has the travel potential.

In the Capital-National interchange, Capital DC-4 aircraft are used during the months November through April, the heavy traffic season in the area served by National. During the summer months May through October, National's DC-4's are used exclusively, permitting Capital to obtain full utilization of its fleet during its heavy traffic season.

Currently, National's planes are flying the entire interchange route from Miami to Washington to Detroit and return. For the Miami-Washington portion of each through flight, National's take is the same as it would be if operating an ordinary local connecting service.

But when the flight traverses Capital's Washington-Detroit route, the revenue formula comes into play with National being reimbursed via the fixed-rate method for use of its equipment and crews and Capital for its ground services. Then, the amount left over is split on the percentage basis with National getting 45% and Capital 55%.

During the winter months, of

course, with Capital's equipment being used, the formula works in reverse with National, the lessee, getting 55% and Capital, the lessor, 45%.

Seven Interchanges

There are now seven approved interchange services in this country with most of them in active operation. Five others are awaiting Civil Aeronautics Board approval. And with the Board openly favoring airline growth via the interchange media, instead of via new route grants, many more can be expected.

The impact on airline sales and earnings, therefore, of an interchange formula of the National-Capital type can be readily seen.

Usually, in other interchange agreements, the aircraft lessor is paid a rental charge based on a fixed mileage rate, such rate reflecting cost estimates and a "reasonable profit."

In those cases, the lessee gets all the revenue generated on his system, deducting only the fixed rate per mile for the lessor.

In certain cases, the interchange

parties split the revenue in the same proportion as they would under an ordinary connecting service with a rental charge, of course, going to the lessor.

But under such arrangements, according to Capital and National, it makes little difference to the lessor whether he fills the plane or not because he is getting a straight fixed rate per mile price. Conceivably, this attitude could be reflected throughout the sales force of the lessor and the maximum success of the interchange might not be achieved.

Incentive to Sell

On the other hand, Capital and National say, the main advantage of their type of interchange is that both parties have an opportunity to share in the profits, thus greatly increasing their incentive to make the operation as successful as possible.

Theory behind interchanges is that two or more lines by pooling segments of their routes may offer a through one-plane service to the public, uninterrupted by the necessity

Airlines to Benefit From Pullman Fare Increase

The domestic trunk airlines, currently enjoying an advantage over the railroads east of Chicago on a fare basis, air vs. rail-Pullman-meals, will have an improved position after June 1 when a flat 15% increase on Pullman becomes effective. Because the western roads have a lower basic rail fare, the comparison is slightly less favorable west of Chicago but a 10% increase in round-trip rail fares between Chicago and Los Angeles and San Francisco on the same date as the Pullman increase betters the airlines' picture. A representative comparison of what first-class rail costs and airline fares will be on June 1 between selected pairs of points is shown below. Fares in all cases include tax and the train fares include minimum sleeping accommodations, nominal meal costs and tips. Ground transportation is also included in both cases.

Chicago—East

Boston-Chicago	Round-Trip
Standard rail	\$131.25
Airline	119.46
Washington-Chicago	
Standard rail	103.00
Airline	84.80
New York-Chicago	
'20th Century'	137.39
Standard rail	117.61
Airline	101.37

Chicago—West

Chicago-San Francisco	Round-Trip
'City of San Francisco' ..	\$267.63
Standard rail	217.11
Airline	253.63
New York-San Francisco	
Standard rail to Chicago and 'City of San Francisco' on	389.20
Standard rail, through ...	331.32
Airline	350.00

Over the Counter

Sales Promotion

CLEVER magazine ad run recently by Pan American-Grace Airways, Entitled "Where they know us best they use us most," copy points out things we didn't know before. "Don't be surprised at how many things have been named after Panagra, the pioneer U. S. Air line in South America. 'Stop the Panagras' means turn off electric fans in Buenos Aires. 'Panagras' are top balcony seats in Lima theatres. In Cochabamba, Bolivia, 'Panagra' is the favorite cocktail—in La Paz, a peach melba. Even a baby, born on El Inter-Americano as the luxury plane crossed the Equator, has been named Carlos Antonio Panagra." Interesting and readable copy.

Cheers for Scandinavian Airlines System for its useful folder, "What is Your Money Worth?" By using the table in it, you can tell what your U. S. money is worth in currencies of 21 other countries. A useful gadget . . . SAS scores again with another helpful folder, "It's easy to bring your relatives and friends from Europe." It tells "what you do, what your relative or friend does, what SAS does," explains prepaid orders for tickets, etc.

Chicago and Southern Air Lines is offering mid-west radio stations a series of 13 transcribed programs made at Tower Isle, resort hotel on the island of Jamaica. The 13½-minute recordings, which contain no C&S advertising, consist of calypso music by the hotel orchestra, the Jamaican military band, interviews with guests and a floor show from the hotel . . . "Your Hawaii," a survey of Hawaiian industry, culture, peoples and points of interest, has been prepared for distribution to educators by the school and college service department of United Air Lines. It's available free of charge in units of five from UAL in New York, Chicago, Los Angeles, San Francisco and Seattle . . .

A real stopper, for our money, is Capital Airlines' recent magazine ad, "Picture of a Man in a Hurry." Shows a man, completely relaxed, getting there in a "comfortable hurry" on a Constellation. Capital's current ad is "Just a Meal and a Magazine Away" . . . Company's direct mail promotion is featuring Constellations—"extra wide seats, never placed more than two abreast!" . . . British Overseas Airways Corporation says it is now permitting passengers to send telegraphic messages while in flight at a cost of 14c a word, maximum of 15 words. They can be sent in an emergency or by prior arrangement. They can't be sent when plane is within 300 miles of destination . . .

Last issue we told a story illustrating how to sell and how not to sell. Briefly, it involved the man in Chicago who decided to take a Mexican vacation and went to American, Eastern and Chicago and Southern but couldn't find anyone very much interested in giving him any information. He finally turned to Braniff, which stood to gain comparatively little from the trip, and received excellent service.

We now have a letter from Johnny Shad, director of station sales for C&S, who says that his company, along with the others involved, received a letter of complaint from this prospective passenger "and promptly followed it up through our Chicago office with a personal call." Tom Miller, vice president-traffic and sales, also wrote the man a letter of regret regarding the incident. "It appears," says Johnny, "we have taken an unhappy incident in this passenger's case, and used it to make a friend." Question: Did the other airlines use a similar follow-up?

New Services and Traffic

BRANIFF-Continental-American DC-6 interchange service started May 20, one round-trip daily Houston-San Antonio-El Paso-Los Angeles . . . Central Airlines is now operating DC-3's exclusively over its entire local service system. It started with single-engined Bonanzas . . . United Air Lines on June 1 increases Hawaiian service from 12 to 14 round-trips weekly, seven from San Francisco, seven from Los Angeles . . . Wisconsin Central Airlines has asked CAB permission to suspend summer season service to Land O'Lakes, Wis. Field isn't adequately for line's newly-acquired DC-3's . . .

Colonial Airlines started service May 15 to Triple Cities (Binghamton, Endicott, Johnson City, N. Y.) through new Broome County Airport . . . Trans-Canada Air Lines has upped New York-Toronto service to four round-trips daily . . .

British Overseas Airways Corp. resumes New York-Bermuda service sometime in June. Constellations will be used three times weekly over weekends, but definite days of operation haven't been announced yet . . . Cia. Mexicana de Aviacion has established two new services, Los Angeles-Tijuana and Tijuana-Mexicali, through addition of a new local DC-3 schedule Los Angeles-Mexico City, on which Tijuana has been added as an intermediate stop.

of a change of planes at a junction point.

Largely, the immediate benefit is to the public utilizing the service. But the advantages of improved service are reflected in increased traffic loads so that the participating airlines stand to gain also.

The interchange, however, is in effect, a substitute for a new route. If left to develop solely on its inherent advantage of improved service, it may not develop to the extent that the same route operated by a single airline would.

Consequently, a sell-every-seat stimulant such as that devised by Capital and National appeals to offer the framework and possibly the solution for successfully making two routes into one without either line surrendering a mile or its identity.

1950 AIRLINE SALARIES

Following are 1950 airline salaries as reported to CAB:

Caribbean Atlantic Airlines

Dionisio Trigo, pres., \$10,000 salary; Benigno Trigo, v.p., \$3,500; Frank H. Sheldon, v.p. traffic, \$8,400 (up \$6,300); Jose M. Sierra, v.p. operations, \$10,149.98 (up \$149.98); L. A. Lockhart, treas., \$7,800 (up \$600); Adolfo Valdes, secy., no salary.

Helicopter Air Service

T. H. Reidy, pres., treas. and dir., \$12,000 salary; C. W. Moore, v.p. operations, \$7,850; C. E. Cessna, secy. and dir., no salary; R. B. Kiel, asst. secy. and asst. treas., \$5,504.98 (up \$935.07).

Los Angeles Airways

C. M. Belinn, pres. and dir., \$15,000 salary; M. J. Burke, secy. and dir., no salary; Wayne H. Fisher, treas. and dir., no salary.

CAB CALENDAR

May 28—(Docket 4656) Prehearing conference in Houston-New York Interchange Case (Trans World Airlines/Chicago and Southern Air Lines). 10 a. m., Room 5040, Commerce Bldg., Washington. Examiner William F. Cusick. Postponed from May 15.

May 29—(Docket 4863) Prehearing conference in Chicago-Mexico City Interchange Case (Chicago and Southern/Pan American). 10 a. m., Room E-210, Temp. Bldg. 5, Washington. Examiner William F. Cusick.

June 4—(Dockets 2849 et al. & 3663) Hearing in Big Four Mail Rate Proceeding and Efficiency Investigation. Tentative. Examiner Edward T. Stodola. Postponed from April 2.

June 4—(Docket 4907) Hearing in Investigation of Colonial Airlines and its Officers. 10 a. m., 516 U. S. Court House, New York, N. Y. Examiner Thomas L. Wrenn. Postponed from April 30.

June 4—(Docket 3842) Hearing in New England Air Express Individual Exemption Case. Tentative. Examiner James S. Keith.

June 12—(Docket 2936) Hearing on application of Braniff Airways to serve Tulsa, Okla., on Route 9. Tentative.

July 9—(Docket 4852 et al.) Hearing in Empire Air Lines Certificate Renewal Case. Tentative. Examiner Warren E. Baker. Postponed from June 13.

U. S. Domestic Airline Traffic, January, 1951

AIRLINES	REVENUE PASSENGERS	REVENUE PASSENGER MILES	AVAILABLE SEAT MILES	PASSENGER LOAD FACTOR	MAIL TONNAGES	EXPRESS TONNAGES	FREIGHT TONNAGES	TOTAL TONNAGES	REVENUE TRAFFIC	AVAILABLE TONNAGES	% AVAILABLE TONNAGES USED	REVENUE PLANE MILES	SCHEDULED MILES	% SCHEDULED MILES COMPLETED
American	320,696	165,217,000	226,713,000	72.87	1,063,921	812,279	2,793,767	20,858,001	29,772,359	29,772,359	70.06	5,263,206	5,284,860	97.19
Boeing	59,001	20,617,000	34,286,000	60.13	124,373	101,996	153,674	2,352,036	4,461,356	4,461,356	52.72	970,303	962,299	97.66
Capital	116,055	38,865,000	73,053,000	53.17	131,965	191,019	388,349	4,426,592	9,832,040	9,832,040	45.02	1,862,144	1,826,591	92.06
Caribbean	7,976	602,000	1,337,000	45.03	800	...	2,613	51,898	127,243	127,243	40.78	49,300	50,569	97.05
C & S	29,296	10,941,000	17,972,000	60.88	48,485	59,738	57,215	1,213,942	2,205,381	2,205,381	59.04	623,842	668,289	92.74
Colonial	15,829	4,060,000	8,359,000	48.57	8,511	7,573	7,534	432,102	979,266	979,266	44.13	284,412	301,479	94.12
Continental	19,491	7,399,000	15,678,000	47.19	18,080	11,011	50,915	787,352	1,620,683	1,620,683	48.58	541,541	504,507	92.57
Delta	64,783	32,890,000	52,960,000	62.10	131,020	99,669	320,678	3,718,943	6,776,283	6,776,283	56.88	1,425,687	1,418,777	96.54
Eastern	269,038	138,094,000	221,498,000	62.34	461,020	515,688	423,186	15,790,677	30,885,478	30,885,478	51.12	4,964,151	5,121,921	96.86
Hawaiian	24,790	3,228,000	5,464,000	59.08	3,137	8,079	54,139	330,723	682,095	682,095	48.49	251,921	206,244	99.86
Inland**	7,766	3,006,000	5,930,000	50.69	15,098	6,940	8,973	318,399	670,615	670,615	47.48	246,140	260,090	94.64
NCA***	31,086	9,688,000	17,316,000	55.95	29,570	19,515	41,887	1,017,084	1,892,635	1,892,635	53.74	698,895	655,750	97.71
National	49,472	35,197,000	56,638,000	62.14	73,554	50,437	371,486	4,082,112	7,493,196	7,493,196	56.48	1,305,915	1,233,680	96.80
Northeast	26,674	4,985,000	9,793,000	52.09	10,292	20,132	15,412	508,051	975,253	975,253	52.09	315,502	342,250	89.61
Northwest	44,384	29,670,000	63,931,000	46.41	208,071	190,924	437,111	3,753,643	7,889,301	7,889,301	47.58	1,297,410	1,431,061	89.97
Trans Pac.	8,496	999,000	2,451,000	40.76	...	83	1,150	79,036	231,656	231,656	34.12	87,646	73,301	100.00
TWA	138,583	99,918,000	156,962,000	63.66	862,378	733,445	1,206,470	12,380,507	21,249,435	21,249,435	58.26	3,947,819	4,173,771	92.21
United	...	118,869,000	172,730,000	68.81	1,044,359	966,814	2,117,637	15,677,654	25,947,541	25,947,541	60.41	4,406,007	4,406,007	97.52
Western**	44,199	16,003,000	27,827,000	57.51	83,077	32,123	53,445	1,696,771	2,952,489	2,952,489	57.47	703,562	697,258	97.52
TOTALS	1,277,965	740,226,000	1,170,858,000	63.22	4,317,711	3,827,245	8,505,441	89,475,522	156,644,305	156,644,305	57.11	29,245,403	20,090,776	94.83

* Not available.
 ** Figures do not include operations of feeder segment awarded NCA by CAB in Parks Air Lines investigation of route 106 are carried separately on feeder airlines summary sheets.
 *** Figures include both scheduled and non-scheduled operations.
 **** Operations of Western and its subsidiary, Inland, should be considered as consolidated, although reports are filed separately as shown here.
 ***** Includes air parcel post.

U. S. Domestic Airline Traffic, February, 1951

AIRLINES	REVENUE PASSENGERS	REVENUE PASSENGER MILES	AVAILABLE SEAT MILES	PASSENGER LOAD FACTOR	MAIL TONNAGES	EXPRESS TONNAGES	FREIGHT TONNAGES	TOTAL TONNAGES	REVENUE TRAFFIC	AVAILABLE TONNAGES	% AVAILABLE TONNAGES USED	REVENUE PLANE MILES	SCHEDULED MILES	% SCHEDULED MILES COMPLETED
American	293,225	146,509,000	197,830,000	74.06	1,147,920	866,011	3,096,809	19,453,149	26,469,299	26,469,299	73.49	4,687,860	4,797,473	95.64
Boeing	54,340	18,107,000	30,434,000	59.49	131,732	110,429	142,435	2,117,795	3,970,649	3,970,649	53.32	869,799	877,799	97.95
Capital	108,418	36,139,000	65,424,000	55.24	160,868	226,827	425,024	4,269,534	8,745,540	8,745,540	48.82	1,666,149	1,665,890	90.58
Caribbean	9,027	711,000	1,399,000	50.82	661	...	3,109	61,107	133,799	133,799	45.67	51,840	51,489	100.00
C & S	28,715	10,481,000	16,812,000	62.34	55,956	63,048	69,346	1,193,380	2,071,169	2,071,169	57.60	586,571	612,981	94.23
Colonial	16,131	4,196,000	7,466,000	56.20	8,772	8,276	9,890	450,052	876,779	876,779	51.37	254,446	272,052	90.04
Continental	17,786	6,388,000	13,894,000	47.42	22,074	12,573	52,393	732,373	1,440,243	1,440,243	49.74	484,553	455,784	98.73
Delta	62,809	32,886,000	51,340,000	64.06	149,646	125,584	380,187	3,826,238	6,572,589	6,572,589	58.22	1,367,955	1,312,776	96.55
Eastern	266,922	138,170,000	210,821,000	65.53	483,766	600,919	439,171	15,951,930	29,285,477	29,285,477	54.46	4,682,833	5,109,554	91.83
Hawaiian	22,453	2,873,000	4,931,000	62.58	3,219	8,116	45,500	296,550	563,306	563,306	52.64	211,746	186,329	99.39
Inland**	6,478	2,523,000	5,187,000	48.64	17,611	7,524	14,488	281,309	580,718	580,718	48.44	217,647	234,920	92.53
NCA***	25,739	7,814,000	14,031,000	55.69	32,964	24,684	45,042	851,563	1,531,669	1,531,669	55.60	563,477	592,535	91.53
National	53,373	39,218,000	54,390,000	72.11	88,695	38,479	373,308	4,604,212	7,212,145	7,212,145	63.84	1,271,097	1,162,392	98.04
Northeast	29,119	5,425,000	9,329,000	58.15	13,243	18,688	19,543	554,567	932,914	932,914	59.44	301,038	309,412	90.52
Northwest	30,167	19,865,000	38,885,000	51.09	160,403	184,631	322,996	2,618,487	4,735,141	4,735,141	55.30	746,267	1,039,654	70.16
Trans Pac.	7,250	850,000	2,085,000	40.77	...	123	1,489	68,125	194,797	194,797	34.97	76,174	66,145	100.00
TWA	118,184	84,564,000	134,619,000	62.82	893,263	804,592	1,314,507	11,134,676	18,438,814	18,438,814	60.39	3,395,471	3,798,478	86.24
United	...	106,127,000	153,523,000	69.12	1,247,518	1,065,728	2,072,722	14,565,722	23,438,764	23,438,764	62.14	3,945,940	4,406,007	97.52
Western**	43,383	15,708,000	25,603,000	61.35	89,468	38,062	58,117	1,686,130	2,735,506	2,735,506	61.64	638,773	629,896	99.01
TOTALS	1,193,515	678,754,000	1,037,681,000	65.41	4,707,779	4,203,198	8,986,076	84,700,899	139,929,318	139,929,318	60.53	26,017,574	18,060,005	91.90

* Not available.
 ** Figures do not include operations of feeder segment awarded NCA by CAB in Parks Air Lines investigation of route 106 are carried separately on feeder airlines summary sheets.
 *** Figures include both scheduled and non-scheduled operations.
 **** Operations of Western and its subsidiary, Inland, should be considered as consolidated, although reports are filed separately as shown here.
 ***** Includes air parcel post.

U. S. Domestic Airline Revenues & Expenses, January, 1951

AIRLINES	TOTAL OPERATING REVENUES	PASSENGER REVENUES	MAIL REVENUES	EXPRESS REVENUES	FREIGHT REVENUES	EXCESS BAGGAGE REVENUES	NON-SCHEDULED TRANSPORT REV.	TOTAL OPERATING EXPENSES	AIRCRAFT OPERATING EXPENSES	GROUNDS & INDIRECT EXPENSES	NET OPERATING INCOME
American	\$ 10,837,136	\$ 9,114,865	\$ 591,897	\$ 293,153	\$ 560,381	\$ 104,477	\$ 45,094	\$ 8,317,206	\$ 3,902,913	\$ 4,414,293	\$ 2,519,930
Boeing	1,411,378	1,150,541	158,357	34,350	35,819	9,679	19,593	1,210,611	522,236	688,375	200,968
Capital	2,657,375	1,905,723	332,958	65,345	76,173	13,884	213,632	2,621,347	1,264,575	1,356,772	36,028
Caribbean	82,144	57,130	19,633	...	2,620	528	350	73,162	31,856	41,306	8,982
C & S	802,395	644,101	126,558	11,948	12,537	5,397	...	755,944	301,488	454,456	46,450
Colonial	346,667	239,443	98,960	3,608	2,385	1,659	...	379,261	165,125	214,136	-32,994
Continental	602,044	408,571	133,781	4,261	11,217	2,505	24,320	509,182	254,487	254,695	92,862
Delta	2,013,824	1,767,891	85,406	31,813	99,434	26,958	32,172	1,650,169	819,223	830,946	363,655
Eastern	8,485,225	7,694,140	303,744	167,311	92,401	155,161	56,205	6,680,445	3,750,493	2,949,952	1,804,780
Hawaiian	259,528	219,504	1,882	8,785	22,602	4,764	...	283,157	107,999	175,558	-23,629
Inland**	248,805	179,497	61,034	2,888	3,329	1,667	...	234,872	104,367	130,505	13,933
NCA***	723,592	533,337	129,032	6,773	10,617	3,509	38,933	663,071	300,673	362,398	60,521
National	2,254,735	1,948,327	141,318	20,710	72,919	42,320	26,731	1,687,024	833,373	853,651	567,711
Northeast	462,629	309,061	128,331	8,000	6,995	1,225	...	469,166	200,624	268,542	-6,537
Northwest	2,055,871	1,998,358	239,651	64,914	84,300	13,332	3,756	2,793,707	1,501,793	1,291,914	-737,836
Trans Pacific	70,905	49,073	...	280	881	861	19,184	91,423	35,752	55,671	-20,518
TWA	6,649,623	5,443,699	539,357	266,299	250,319	53,403	62,808	6,341,841	3,268,949	3,072,892	307,088
United	8,016,638	6,420,603	655,314	348,210	378,910	66,017	80,306	6,941,336	3,125,968	3,815,368	1,075,308
Western*	942,730	754,794	117,771	8,799	12,003	4,440	21,361	858,033	390,859	467,174	84,688
TOTALS	48,923,434	40,438,858	3,864,784	1,347,447	1,695,842	511,786	645,304	42,560,957	20,862,353	21,698,604	6,362,478

* Operations of Western and its subsidiary, Inland, should be considered as consolidated, although reports are filed separately as shown here.
 ** Figures do not include operations of feeder segment (route 106) awarded NCA by CAB in the Parks Air Lines investigation Case. Figures for route 106 are carried separately on feeder airlines summary sheets.
 *** Figures include both scheduled and non-scheduled operations.

U. S. International Airline Traffic, January, 1951

AIRLINES	REVENUE PASSENGERS	REVENUE PASSENGER MILES	AVAILABLE SEAT MILES	PASSENGER LOAD FACTOR	U. S. MAIL TON-MAILES **	FOREIGN MAIL TON-MAILES	EXPRESS TON-MAILES	FREIGHT TON-MAILES	TOTAL TON-MAILES	REV. TRAFFIC	AVAILABLE TON-MAILES	% AVAILABLE TON-MAILES	REVENUE PLANE-MILES	SCHEDULED MILES	% SCHEDULED MILES COMP. LETT.
American	9,560	7,402,000	13,083,000	56.58	13,041	3,724	972	128,508	947,091	1,587,594	59.66	239,567	229,625	99.77	
Branniff	2,036	3,986,000	11,338,000	35.16	9,800	2,020	...	96,880	505,871	1,618,018	31.26	266,725	270,773	98.51	
C & S	2,383	2,393,000	6,258,000	33.24	2,778	365	...	44,584	297,303	884,847	33.61	136,533	143,902	94.88	
Colonial	1,967	1,557,000	2,658,000	58.58	1,061	419	...	3,120	173,037	319,500	56.16	51,120	50,347	98.46	
Eastern	1,930	2,007,000	3,869,000	51.87	7,514	...	...	12,502	238,658	437,754	54.52	64,480	*	*
National	10,549	2,756,000	6,866,000	40.14	1,006	10	3,748	19,424	304,185	893,213	34.06	123,791	115,382	96.70	
Northwest	4,804	8,543,000	18,682,000	45.73	155,782	26,613	14,366	486,552	1,591,444	2,744,826	57.98	490,559	494,854	98.74	
Panagra	8,872	9,059,000	17,748,000	51.04	31,504	21,322	145,846	...	1,195,850	2,457,210	48.67	491,537	493,354	99.32	
FAA	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Latin Amer.	64,149	52,641,000	31,874,000	64.30	249,529	59,662	1,820,123	33,176	7,463,390	12,315,267	60.60	2,259,288	1,850,604	98.91	
Atlantic	20,933	28,741,000	45,396,000	63.31	361,594	109,285	811,357	27,251	4,453,112	7,189,470	61.94	1,168,787	1,175,484	95.64	
Pacific	5,278	17,358,000	35,966,000	48.26	435,570	53,028	443,751	...	2,734,259	5,419,586	50.45	753,062	753,900	99.89	
Alaska	2,788	3,023,000	7,751,000	39.00	28,211	...	235,700	...	584,271	1,072,198	56.49	169,552	184,648	90.17	
TWA	6,703	18,546,000	41,776,000	44.39	317,033	135,395	...	504,476	2,996,949	5,348,083	56.04	946,435	1,023,193	91.09	
United	*	6,616,000	13,221,000	50.04	62,199	...	...	37,578	805,153	1,625,759	49.52	259,310	*	*
TOTALS	141,952	164,623,000	306,486,000	53.71	1,676,622	411,843	3,475,863	1,394,051	24,290,573	43,913,125	55.31	7,420,746	6,786,066	96.93	
* Not available. ** Includes air parcel post. NOTES: Figures include both scheduled and non-scheduled operations.															

* Not available.

** Includes air parcel post.

NOTE: Figures include both scheduled and non-scheduled operations.

U. S. International Airline Revenues & Expenses, January, 1951

AIRLINES	TOTAL OPERATING REVENUES	PASSENGER REVENUES	U. S. MAIL REVENUES	FOREIGN MAIL REVENUES	EXPRESS REVENUES	FREIGHT REVENUES	EXCESS BAGGAGE REVENUES	NON-SCHEDULED TRANSPORT REV.	TOTAL OPERATING EXPENSES	AIRCRAFT OPERATING EXPENSES	GROUND & INDIRECT EXPENSES	NET OPERATING INCOME
American	\$ 436,537	\$ 375,306	\$ 9,715	\$ 6,585	\$ 352	\$ 25,797	\$ 5,754	\$...	\$ 349,371	\$ 176,012	\$ 173,359	\$ 87,166
Branniff	529,854	312,612	172,998	6,086	...	24,619	8,744	...	537,528	246,313	291,215	-7,674
C & S	317,221	168,299	122,573	692	...	16,878	6,279	...	268,137	125,464	142,673	49,085
Colonial	90,410	83,115	4,957	1,300	...	...	407	...	113,668	46,589	67,079	-23,258
Eastern	109,454	93,169	5,650	...	...	2,750	1,885	...	85,661	49,839	35,822	17,793
National	196,008	181,270	6,749	...	1,401	3,814	2,773	...	229,673	89,728	140,035	-33,755
Northwest	1,126,486	576,798	259,350	42,387	4,385	114,241	4,783	1,389	1,064,984	542,778	522,206	61,501
Panagra	1,314,621	822,222	303,859*	81,055	61,003	...	27,872	1,732	1,125,743	521,858	603,885	188,879
FAA	...	...	...	...	...	...	...	...	...	...	...	...
Latin Amer.	5,229,381	3,650,262	602,250	167,974	629,676	...	92,807	32,141	5,205,480	2,324,291	2,881,189	23,901
Atlantic	3,921,769	2,084,906	1,142,910	222,538	319,918	...	38,779	34,468	4,509,697	2,397,439	2,112,258	-587,929
Pacific	2,440,701	1,164,111	980,400	89,872	177,416	...	13,719	...	2,050,888	1,241,246	809,642	389,813
Alaska	341,521	187,752	98,000	...	54,344	...	1,201	...	408,194	182,692	225,502	-66,674
TWA	2,843,683	1,394,284	730,231	285,440	...	210,143	31,977	10,565	3,091,047	1,446,692	1,644,355	-247,364
United	816,454	372,069	49,304	...	...	12,733	2,748	...	796,208	515,169	281,039	20,246
TOTALS	19,706,100	11,466,175	4,592,946	903,929	1,248,495	411,481	239,728	80,295	19,836,369	9,906,110	9,930,259	-128,271

* U.S. mail pay accrued on basis of Show Cause order dated April 12, 1949, which accrual exceeds amounts payable by temporary rate order dated April 13, 1950 by \$86,759.

U. S. Local Service Airline Traffic, January, 1951

AIRLINES	REVENUE PASSENGERS	REVENUE PASSENGER MILES	AVAILABLE SEAT MILES	PASSENGER LOAD FACTOR	MAIL TON-MAILES	EXPRESS TON-MAILES	FREIGHT TON-MAILES	TOTAL TON-MAILES	REVENUE TRAFFIC	AVAILABLE TON-MAILES	% AVAILABLE TON-MAILES	REVENUE PLANE-MILES	SCHEDULED MILES	% SCHEDULED MILES COMPLETED
All American	10,603	1,447,000	4,813,000	30.06	3,461	12,171	...	197,225	550,060	28.58	229,192	260,250	87.13	
Bonanza	1,976	503,000	1,514,000	33.22	377	186	...	48,912	154,891	31.57	74,105	79,068	93.07	
Central	1,332	243,000	1,794,000	13.55	1,414	...	...	24,680	202,985	12.16	116,797	123,721	93.92
Empire	3,238	596,000	2,197,000	27.12	1,987	1,480	...	60,249	216,743	27.79	104,606	107,757	96.38	
Frontier	6,380	1,722,000	7,389,000	23.30	7,521	4,932	14,230	199,402	619,786	32.17	369,293	379,812	94.74	
Lake Central	3,309	1,855,000	2,770,000	66.97	811	10,013	...	196,834	567,095	34.71	176,374	99,944	82.27	
NCA*	3,033	611,000	1,689,000	36.18	1,395	3,237	1,763	64,781	193,046	33.56	80,436	83,948	95.41	
Mid-West	251	31,000	285,000	10.92	670	...	...	3,318	31,269	10.43	71,067	77,934	90.77
Osark **	1,919	252,000	1,264,000	19.94	959	5,423	...	30,540	131,567	22.86	88,283	128,555	67.38	
Piedmont	10,413	2,500,000	6,246,000	40.03	4,091	7,483	8,654	259,732	711,408	36.51	296,420	302,231	94.52	
Pioneer	11,261	3,048,000	7,137,000	42.70	8,003	3,770	9,707	327,485	713,892	45.87	297,455	295,924	98.76	
Robinson	5,188	803,000	1,961,000	41.37	1,873	5,113	2,854	83,942	182,611	45.97	99,636	116,036	82.68	
Southern	4,829	881,000	4,203,000	20.96	6,097	1,147	...	94,309	380,940	24.76	202,646	234,267	85.72	
Southwest	8,775	1,695,000	4,064,000	41.71	3,636	2,897	10,319	186,992	464,431	40.26	193,513	199,867	93.38	
Trans-Texas	5,795	1,547,000	4,870,000	31.78	3,043	2,409	4,546	165,264	486,977	35.96	231,894	236,964	92.39	
West Coast	3,474	484,000	1,869,000	25.90	489	731	1,905	47,533	165,119	28.79	89,021	95,170	93.54	
Wiggins	275	25,000	224,000	11.16	115	...	...	2,358	23,055	10.23	56,252	61,656	68.56
Wis. Central	3,405	531,000	1,212,000	43.81	2,624	3,244	...	55,840	125,399	44.53	151,444	160,952	94.09	
TOTALS	85,456	18,774,000	55,481,000	33.89	48,566	64,241	54,686	2,009,396	5,923,274	33.91	2,928,394	3,064,104	91.71	
						Helicopter Mail Service								
HAS	...	...	...	...	1,599	...	...	1,599	5,264	30.52	25,245	28,598	88.28
Los Angeles	...	...	...	...	4,200	...	...	4,200	13,185	31.85	30,699	31,736	96.73
						Figures for Osark Air Lines Not Previously Reported. **								
September	117	18,000	68,000	26.47	136	...	...	1,922	6,937	27.71	4,505	6,040	68.33
October	1,128	166,000	619,000	26.32	987	...	...	17,082	63,599	28.09	37,082	37,440	96.40
November	1,418	206,000	1,109,000	18.77	858	2,522	...	29,865	116,565	19.60	69,824	86,986	80.76	
December	1,339	202,000	1,054,000	19.17	2,216	5,948	...	29,223	134,481	21.73	72,970	97,604	73.73	
* Figures cover feeder segment awarded NCA by CAB in Parks Air Lines Investigation Case. ** Began operations September 26, 1950.														

Figures for Osark Air Lines Not Previously Reported.

* Figures cover feeder segment awarded MCA by CAB in Parks Air Lines Investigation Case.

** Began operations September 29, 1950.

NOTE: Figures include both scheduled and non-scheduled operations.

ADMINISTRATIVE

Frank L. Musgrave has been appointed administrative assistant to **D. F. Magarrell**, vice president—passenger service of United Air Lines.

Anthony A. Ettel has been promoted from supervisor of the assignment office of Northwest Airlines to the position of personnel representative at the airline's main overhaul base at Holman Field. **Donald C. Oswald** takes over Ettel's former post.

OPERATIONS-MAINTENANCE

O. W. Johnson becomes assistant to **D. V. O'Leary**, director of purchasing and stores for United Air Lines. **John J. Stark** succeeds Johnson as purchasing manager.



Johnson

W. J. Buchren becomes general foreman of line maintenance for The Flying Tiger Line; **B. E. Replogle** named assistant

to the superintendent of stations; **R. C. Moran** to acting station manager at Detroit; **Raymond McGinnis** replaces **James Giffin** as acting station manager in Milwaukee.

Gene B. Gardner has been named manager of Pioneer Air Lines' station at Plainview, replacing **Ken Cook**, recently reassigned. Gardner formerly was assistant station manager at Fort Worth.

J. M. Arnold, food service supervisor for Northwest Airlines in Tokyo for the past two years, has been designated to supervise all phases of NWA's food service functions within the Orient region, with headquarters in Tokyo.

W. G. Ledger, formerly purser flight instructor for Trans World Airlines in New York, has been appointed superintendent of pursers for the Atlantic region. He replaces **Walter Menke**, who transferred to public relations. Ledger's former job was taken over by **Jack Huxley**, formerly superintendent of pursers and hostesses for the Middle & Far East Region at Cairo.

Patsy Pray has been transferred as supervisor of stewardesses for American Airlines from Buffalo to Boston, replacing **Joan Murdock**, resigned.

Raymond Marsden-Smith, formerly with American Overseas Airlines, has been named manager of Trans World Airlines' new sales office in Manchester, England.

D. M. Jaffray, formerly transportation agent for Northwest Airlines at Shemya, Aleutian Islands, has been promoted to station manager there, succeeding **Alexander George, Jr.**, who will

Airline Commentary

By Eric Bramley



EXECUTIVES of Chicago and Southern Air Lines had been split on whether to name their fleet of airplanes for cities or for states. The city idea won out, but one day shortly thereafter one of the chief advocates of naming for cities was at the Memphis terminal when a C&S Connie taxied up to the ramp. A small boy asked his mother, "What is Caracas, Mom?" "Oh, it's some small town over in Arkansas," she replied.

The following story was reported by the Denver Post: An old-timer, veteran of many years on the range, was riding Continental Air Lines from San Antonio to El Paso. His seat belt wasn't fastened and Hostess Margaret Stephens quietly asked him if he would please take care of the matter. Cupping his hand over his ear, the old man queried, "What say?" Louder, she repeated, "I said please fasten your seat belt." Again he asked, "What's that again?" Losing her usual hostess composure, Margaret roared, "I said cinch up that belly band, pardner!" Now that she was speaking his language, the old man's face lit up, he grinned, and replied, "Okay, sis."

Comment from a reader: "What state capitals are without scheduled airline service? So far as I can find, there are two—Annapolis, Md., and Jefferson City, Mo., and the latter will have service when the airport is extended to permit Ozark to land there." Anyone care to add anything?

The airline reservations gal in Dallas was new on the job. All efficiency, she briskly dialed what she thought was the limousine service to arrange transportation for a passenger. "I have a pickup for you," she told the woman who answered the phone. "Who is he?" the latter asked. The obliging reservationist gave the passenger's name, home address, and Dallas hotel address, and she added that "he won't be ready until 8 p. m." "But why can't we pick him up now?" the woman asked. The reservationist, somewhat puzzled, asked to whom she was talking. "The sheriff's office," came the unruffled reply. "Thanks, we'll get the man."

The case of the missing hat is related to us by **Buell Patterson**, publicity director of Pan American-Grace Airways. "When I was traveling across the Chilean lake region recently," says Buell, "I left a hat hanging on a hook in a restaurant between Bariloche and Peulla. Frantic at the loss (you know how the wind blows my toupee) I had an interpreter (**Ben Holt** of Panagra) explain the disaster to the bus driver who was taking us to the next steamer. Ben then told me, 'You will get the hat back, but when, no one knows.'

"Picture the fact that there was no connection between Panagra and the bus driver or sundry other transportation people who were going to become involved and then picture my amazement when the hat arrived Apr. 27. It had left the Patterson head for all useful purposes on or about Mar. 4. "To get to New York, the hat had gone the length (and breadth) of Chile, Peru, Ecuador, crossed the Gulf after a visit to Panama and in some manner evaded the Floridians and sundry others on its way north. The South Americans are a wonderful people."

We always read all the airline houseorgans that come into this office, and there are quite a number of good ones with very interesting features. To give special credit where we think it's due, we award special mention for consistently good and interesting writing to whoever turns out the "Control Tower" column in Delta Air Lines' "Digest." This unsigned column is a regular feature and deals with a wide variety of subjects that are of interest to company employees—passenger service, equipment, subsidies, etc. It serves the purpose of getting important information to the employees in a very readable, chatty manner. Other airlines might do well to consider something similar.

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For complete information write to Dep't AA

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serve as vacation-relief manager for Orient stations.

TRAFFIC & SALES

John W. Force, Jr., has been promoted to superintendent of reservations and reservations control for Pioneer Air Lines, replacing W. W. Spradley, recently called to active duty with the Air Force.

William L. Carr, district sales manager for Mid-Continent Airlines at Rochester, Minn., has been promoted to the district managership at Tulsa. His successor at Rochester is Harry T. Jarrett, Jr., formerly of Kansas City.

Norman Gelger, formerly in the travel agency and tour business in Alaska and before that with Western Air Lines in Los Angeles, has been named west coast sales manager of Continental Air Lines.

Clyde Morgan, formerly public relations director of the French Institute and the French Line, has been named public relations director of Air France's North American and Caribbean Division.

Glenn W. Evers has been named district sales manager for United Air Lines at Des Moines, replacing A. E. Towne, who has been granted a military leave of absence to join the Military Air Transport Service.

Merrill R. LaCroix, James W. Wesner and William H. Lightner have been promoted from sales agents to traffic representatives for Mid-Continent Airlines in Minneapolis and St. Paul.

William J. Bell, formerly regional cargo sales manager for Northwest Airlines at Chicago, has been named manager of a new NWA interline and agency sales office in Tokyo, serving the Far East.

Andre Gauthier has been appointed city manager for Trans-Canada Air Lines at TCA's new offices in Quebec.

David W. Owen has been appointed district sales manager for Bonanza Air Lines in the Phoenix-Prescott-Kingman area, with headquarters in the Adams Hotel in Phoenix.

Lester J. Gilbert, Jr., formerly with Northwest Airlines in Duluth and Chicago, has been assigned to Tokyo as sales representative.

Henry R. Holdridge, formerly with United Air Lines' sales staff in Hartford, has been named to handle United's sales, informational and public relations activities in the Western Pacific, with offices in Sydney, Australia.

Claus Franz-Hollman, formerly Trans World Airlines sales supervisor in Frankfurt, Germany, has been transferred to Munich to head TWA's new traffic and sales office in that city.

Eric P. Alvord, formerly in traffic and sales on the west coast with Pan American World Airways, Western Air Lines and Philippine Air Lines, has been named manager of advertising



Save on air travel with
TWA
Family Half-Fare Plan

You pay one full plane fare — only one-half fare for each other family member. (Husband or wife, children over 2 and under 22.) On Mon., Tues., Wed., in the U. S.*

See your travel agent or call Trans World Airlines

*Except May 30, July 4, Sept. 3.

Across the U.S. and overseas... you can depend on **TWA**

and public relations for the Morris Plan Company of California.

Mary E. Carlisle has been promoted from passenger service agent to office manager for West Coast Airlines at Portland. **Malcolm Heywood**, former district traffic manager for WCA at Portland, has resigned to join the outside sales staff of United Air Lines in that city.

Edward Hudak succeeds **James E. Henry** as cargo traffic superintendent of PAA's Latin American Division. Henry holds the new post of assistant to the division sales and advertising manager.



Hudak

A. F. Simpson transferred from Chicago to San Antonio as sales representative for American Airlines, succeeding **C. Hylton Sagely**, recalled to active military duty.

Arthur William McGrath, formerly with Linea Aeropostal Venezolana, Colonial Airlines and Northeast Airlines, has joined the New York cargo sales department of Sabena Belgian Airlines.

John Hanton, city sales manager for Northwest Airlines in New York since last November and before that engaged in sales promotion work for Boeing Airplane Co., has become district sales manager for NWA at Washington, succeeding **J. W. Hutchinson**, resigned.

D. G. Cutler, formerly assistant district sales manager for Philippine Air Lines at Hong Kong, has been appointed district sales manager at Okinawa.

David G. Evans, formerly with Colonial Airlines and Eastern Air Lines, has been appointed district sales representative for All American Airways in the Washington-Baltimore area.

John R. Schwarzkopf has been appointed public relations director for Central Airlines. He was exploitation manager of Fawcett Publications for a number of years.

Bob Henry has been appointed district sales manager for Scandinavian Airlines System in Washington, D. C.

David Owen has been named sales manager for Bonanza Air Lines in Phoenix, Prescott and Kingman, succeeding **Leo McCall**.

V. John Zabohon, formerly president of Air-Land Freight Consolidators, Inc., San Francisco, has been appointed to head the newly created foreign traffic department of The Flying Tiger Line.

Maurice Stacy, formerly sales manager for a local service airline on the west coast, has been appointed sales manager for Pacific Northern Airlines.

Ernest Williams, formerly senior cargo sales representative for Northwest Airlines at New York, has been promoted to district sales manager at Newark.

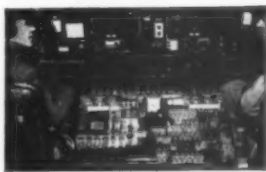
A. L. (Al) Emery has resigned as regional sales manager—Albany for Colonial Airlines and is now promotion manager for the Knickerbocker News in that city. He had been in the airline industry 20 years with American and Colonial.

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The growth of alternating current systems in aircraft is being spurred by the needs of giant military airplanes for compact, versatile communications, navigation and control equipment. Greer Hydraulics keeps pace with this development by designing and manufacturing test machines to meet these new demands.

One of Greer's new Alternator Load Bank Testers, shown above, can load test aircraft alternators of the four-wire, 400-cycle, 120/208 volt, three-phase type with power ratings up to 60 kw or 40 kvar. It can be used for acceptance, post-overhaul and life testing as well as determining the operation performance of alternator components. For complete details, call or write Greer today! There's no obligation. Ask for Specification Sheet LB-1.

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SEEN DUTY OF MANAGERS:

Non-Sked Performance Rules Suggested for Airports

By KEITH SAUNDERS

MANAGERS of large terminal-type airports at which flights of the non-scheduled air carriers originate and terminate should draft a set of regulations that would require the non-skeds to meet adequate standards of terminal service.

This suggestion was made by J. Victor Dallin, chief of the Philadelphia Bureau of Aeronautics, in a speech delivered last month before the Airport Operators Council in Memphis.

While conceding that the non-sked or irregular carrier "is supplying a definite transportation demand, especially at heavy traffic centers," Dallin said these carriers frequently impose on airport managements and on the air traveling public, and should be "brought into line."

"We cannot permit an operator to gamble with the public interest without some risk of serious loss to himself," said Dallin.

"We must require that some reasonable standard of performance be maintained, and unless it is we must reserve to ourselves the right to terminate the operating privileges of the unsatisfactory carrier using our terminals."

Rules Suggested

He suggested that AOC members give consideration to the following specific regulations which are designed to correct some of the more widely reported abuses in the non-sked's operations:

1. No irregular carrier should be authorized to solicit passengers or to perform any sales or ticketing function at the airport except at ticket counter space made available to him directly or indirectly for the purpose by the airport management under formal lease agreements.

2. Each such authorized operator should provide, either at his own exclusive expense or by some consolidated arrangement with other irregular carriers, an adequate information service to accommodate its patrons at all times during the periods when the need for such service can be expected to exist.

3. All such operators should be required prior to the execution of any agreement for ticket counter space to present evidence, particularly in the case of those companies which function as booking agencies, of adequate

financial resources to seriously pursue their undertaking and of firm contracts with acceptable operating companies to carry their passengers.

4. The carriers should be required to assure the airport management that appropriate means will be provided, either directly or indirectly, for ramp service, including aircraft loading and servicing equipment, and that related passenger needs such as baggage handling and ground transportation will be provided.

5. Prominent identification and advertising signs should be provided, under the supervision of the airport management, designating the non-skeds' telephone contacts, and these should be constantly monitored.

No Discrimination

Dallin cautioned, however, that he did not advocate any discrimination against the irregular carriers in such matters as rate structures and space assignments, and that he did not believe such actions would serve "any real or constructive purpose."

"I do not believe either that as airport operators we have the right or in fact any good reason to arbitrarily relegate the non-scheduled terminal operation to some remote and undesirable portion of our building if the assignment of more suitable space is possible, unless, of course, the problem of terminal congestion is a factor," Dallin asserted.

"By doing so, we are not only discouraging the development of his business but also decreasing our own revenues as a result, and this is certainly not our purpose as airport managers."

Management's Duty

However, the airport manager owes a real duty, Dallin said, to the non-scheduled carrier, his passenger, the aviation industry and the public in general "to insure that our merchandising and service tenants are responsible, well-intentioned business men."

"No one who operated a reputable center-city office building could long tolerate a tenant who made a practice of misrepresenting his merchandise, failing to deliver goods or otherwise breaking faith in his customers. The building management, in the interest of its own reputation, would very soon invite the irresponsible tenant to take his business elsewhere."

"And so it must be with us as the custodians or managers of our airport terminal buildings. It is definitely up to us to require adequate standards of terminal service."

Cheap Taxiway Reflectors Built at Illinois Airport

A reflective taxiway marker light that can be fabricated by airport personnel during slack periods at a cost of about \$1.00 per light has been developed by Frank Fitzsimmons, maintenance superintendent of Capital Airport, Springfield, Illinois.

A breakdown of the cost per light, as noted in a circular put out by the Illinois Department of Aeronautics, would be about as follows, depending on the number of lights required: Stake @ 3½¢ per running ft.

of No. 1 lumber \$0.10
(Turn to Page 46)



Heliport—About as large as a tennis court is this new heliport constructed atop Port of New York Authority's office building. Platform is used for PNYA's own helicopter and also serves as an emergency landing spot for 'copters operating in the New York area.

At Your Service!

These strategically located overhaul shops maintain, at all times, adequate stocks of approved parts for the expected maintenance and overhaul requirements of Pratt & Whitney Aircraft engines within their territories.



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- ★ AIRWORK CORPORATION
Millville Municipal Airport, Millville, N. J.
- ★ PACIFIC AIRMOTIVE CORPORATION
Linden, N. J.
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Rentschler Airport, East Hartford, Conn.

Pratt & Whitney Aircraft

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ONE OF THE FOUR DIVISIONS OF UNITED AIRCRAFT CORPORATION

AIRPORT NEWS DIGEST

Segregation at Airports: According to the *Atlanta Journal*, the Southern Conference Educational Fund is planning formal protests against race segregation at some southern airports "in an attempt to halt segregation without taking the matter into court." President of the group is Aubrey Williams, protege of Eleanor Roosevelt and National Youth Administrator in the late '30's.

Meanwhile, some southern cities are acting on their own to ease the racial problem. For example, the dining room, coffee shop, waiting room and toilets in the new terminal building at Norfolk (Va.) Municipal are open to Negroes as well as whites. Prior to formal dedication of the building on May 5, separate toilet facilities had been provided for the two races, but this was changed upon protest from the National Association for the Advancement of Colored People. The new terminal at Byrd Field, Richmond, allows Negroes in the dining room and coffee shop, but has segregated toilet facilities.

TERMINAL BUILDINGS AND AREAS

- **Baton Rouge's \$300,000 terminal building** at Harding Field will be formally dedicated May 19. It consists of a two-story main building and a five-story tower.
- **New \$700,000 terminal building** at Norfolk (Va.) Municipal was dedicated May 5. Terminal is adjacent to the city's famed Azalea Gardens, which were in full bloom at time of the dedication.
- **Plans for a new terminal building** at Sweetwater (Tex.) Municipal have been tentatively approved by CAA engineers.
- **A \$150,000 terminal building** at Cedar City, Utah, has been dedicated.
- **New \$400,000 administration building** at Hutchinson (Kans.) Municipal has been dedicated.
- **Contract has been let for \$100,000 administration building** at Mankato, Minn., Airport.
- **Bids are ready to be advertised for construction** of a \$100,000 terminal at Iowa City Municipal Airport.
- **Contracts have been let for a \$732,852 improvement program**, including a new administration building, at Cedar Rapids (Ia.) Municipal.
- **Commissioners of Lackawanna and Luzerne (Pa.) counties** have appropriated \$150,000 toward cost of a terminal building at Scranton/Wilkes-Barre Airport.

RUNWAYS, TAXIWAYS, APRONS

- **Work has been started on \$319,599 project** to repair runways and taxiways and revise lighting system at Chicago's Midway Airport.

HANGARS AND OTHER STRUCTURES

- **Contract of \$51,999 has been let** for construction of a fire and crash truck station at New Bedford (Mass.) Municipal.
- **Bids have been let for structural steel work** on a 100 x 120 foot hangar at Norfolk (Va.) Municipal. A 40 x 120-foot lean-to may be added later.
- **A large hangar at Cram Field, Davenport, Ia.,** is being dismantled, and steel in structure will be used for building a similar hangar at Davenport Municipal.
- **Contracts have been awarded for construction** of hangars for civilian aircraft, a fire station and a machine shop at Tucson (Ariz.) Municipal.

MISCELLANEOUS

- **Scurry County, Tex., commissioners have let** a \$252,372 contract for construction of the county airport southwest of Snyder. Project does not include terminal building and hangars.
- **Wichita's new municipal airport**, to be built as a replacement for the existing facility being taken over by the Air Force, will be located on a 2,500-acre site about 5½ miles from center of the city. Site grading will be started shortly.

—KEITH SAUNDERS

(Continued from Page 44)

Oil can—No cost except for time in cleaning	0.00
Paint @ \$5.20 gal. (will paint about 200 markers)	0.03
Scotch Lite Paper, 50 yd. roll 6" wide @ \$61.54 f.o.b. Springfield (makes approx. 140 markers)	0.43
Miscellaneous, including labor, nail, etc.	0.44

Total cost (approximate) per light \$1.00

This taxiway marker light is markedly similar in function and appearance to the all-angle taxiway reflector being manufactured and marketed by The Rio Grande Distributing Co. of Dallas. However, it does not have the smooth manufactured lines and adjustability of the Rio Grande product, and probably lacks some of the weather-proof characteristics of the latter.

Both markers are designed so that they will break off easily when struck by an aircraft or piece of maintenance equipment.

An installation of the reflective taxiway markers was made at Capital Airport last December and is reported to be very satisfactory.

CAA AIRPORT GRANTS

Federal-aid airport grant offers totaling \$1,267,170 were made by the Civil Aeronautics Administration during April to 27 communities, as follows (with airport classes in parentheses):

Arkansas: North Little Rock Municipal (2), \$37,000.
California: Los Angeles International (7), \$404,184.
Florida: Orlando Municipal No. 1 (4), \$15,600.
Idaho: Blackfoot Mun. (1), \$6,233.
Illinois: Springfield Mun. (4), \$16,000.
Kansas: Phillip Billard Airport, Topeka (4), \$122,000.
Louisiana: Harding Field, Baton Rouge (5), \$12,500.
Maine: Portland (3), \$4,715.
Mississippi: Paynes Mun., Charleston (2), \$2,250; Natchez Mun. (4), \$6,897.
Montana: Conrad (2), \$2,603; Malta (1), \$4,709.
Nevada: McCarran Field, Las Vegas (5), \$20,437.
New York: La Guardia Airport (5), \$10,000.
North Carolina: Douglas Field, Charlotte (4), \$8,600; Greensboro-High Point (4), \$15,100; Statesville Mun. (2), \$9,500.
North Dakota: Fargo Mun. (4), \$69,500.
Oklahoma: Seminole Mun. (2), \$2,929.
Oregon: Roseburg Mun. (3), \$255,028.
South Dakota: Aberdeen Mun. (4), \$17,690.
Texas: Jefferson County Airport, Beaumont (4), \$16,900; Pecos Mun. (6), \$6,400; Sweetwater Mun. (5), \$22,500.
West Virginia: Raleigh Co. Airport, Beckley (3), \$135,000.
Wyoming: Mondell Field, Newcastle (2), \$23,560; Rock Springs Mun. (4), \$19,335.

These increased to 1,716 the number of grant offers made under the Federal Airport Program, and boosted to \$140,339,094 the amount of Federal funds involved.

How Operators Can Sell To U.S. on Local Level

By VERA FOSTER

THOUGH Washington is generally considered a contract marketplace for manufacturers and operators of large aviation schools only, a surprising amount of government business is distributed across the country to fixed base operators.

With the beginning of the new fiscal year July 1, operators who know where to dig for business will find the effort well worth while.

Army Lightplane

For example, Army officials disclosed recently that 25% of their \$4,678,000, 1951 budget for aircraft spare parts, supplies and maintenance is being spent through local procurement. When Army depots of USAF warehouses cannot supply materials, the Army may buy them locally. The fact that 5,000 engines are to be overhauled annually by civilian contractors, substantiates the growth of Army aviation.

To apply for business, local operators should write the Army depot or army aviation installation nearest them, giving information on parts, services and supplies available and discounts offered. Army planes include the Ryan Navion, Cessna L-19, Aeronca, Piper and Bell H-13 helicopter. Engines, propellers, repair parts and accessories for these planes have been purchased locally. Payment is made, generally, within a month.

Emergency purchases caused by breakdown or accident are handled through Army area headquarters. Routine local purchases are transacted with the six Army area depots.

Pilots of the Army Reserve Corps are encouraged to fly at least 50 hours a year to maintain proficiency. These reservists are authorized by district army reserve offices to log up to 80 hours of flight time locally.

Pest Control

Department of Agriculture through its Bureau of Entomology and Plant Quarantine, is authorized to make funds available to combat insect infestation.

In 1949 two and one-half million acres were sprayed for grasshopper control in Montana and Wyoming alone. Entomologists predict the peak of 'hopper infestation will not be reached for another two years.

A greenbug infestation has broken

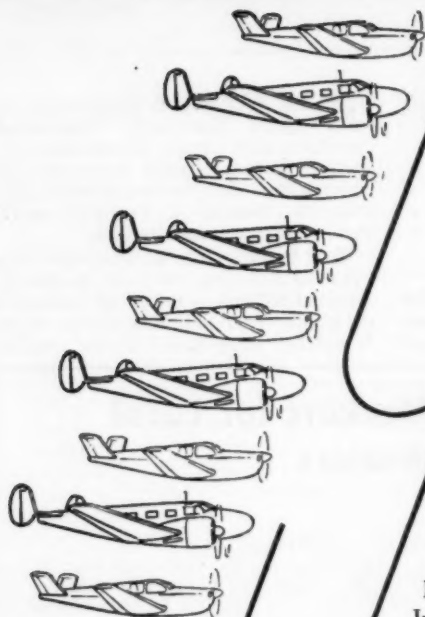
out in millions of acres across the mid-western states. Parathion, used to combat this insect, is best spread

by plane because of the danger to hand spray operators. Interested operators may obtain information regarding active control programs by writing to their state entomologist, generally located at the state agricultural experiment station.

The Bureau of Entomology and Plant Quarantine owns 21 airplanes. At least \$27,300 is believed necessary to supply and maintain these ships. A central office has been set up for

Government Markets for Local Operators

Name	Estimated Annual Local Expenditures	Address
Army (actual)	\$1,169,500	Army Area No. —, Ordnance District Depot. Located I, Seneca-Grazier, Romulus, N. Y.; II, Letterkenny, Chambersburg, Pa.; III, Anniston, Ala.; IV, Red River Arsenal, Texarkana, Tex.; V, Rossford, Toledo, Ohio; VI, Benicia, Calif.; and Mt. Rainier, Wash.
Army Reserve Corps	N.A.	District Army Reserve offices.
State contracts for agricultural pest control	N.A.	State Entomologist, State Agricultural Experiment Station.
U. S. Bureau of Entomology & Plant Quarantine	\$ 27,300	Aircraft Specialties Service, P. O. Box 7216, Oklahoma City, Okla.
Spray contracts	N.A.	
U. S. Forest Service .	\$ 170,000	Regional Forester, U. S. Forest Service. Located: Federal Bldg., Missoula, Mont.; P. O. Bldg., Denver, Colo.; P. O. Bldg., Albuquerque, N. M.; Forest Service Bldg., Ogden, Utah; 630 Sansome St., San Francisco, Calif.; P. O. Bldg., Portland, Ore.; 623 N. 2nd St., Milwaukee, Wisc.
Spruce budworm spray contracts, partial	\$ 675,000	
State contract for forest pest control .	N.A.	State Forester.
U. S. Border Patrol .	\$ 22,000	District Director of Immigration & Naturalization. Los Angeles, Calif.; El Paso, Tex.; San Antonio, Tex.; and Miami, Fla.
Civil Air Patrol	\$ 18,000	Contact local and wing headquarters.
U. S. Fish and Wild Life Service	\$ 55,000	Regional Director, Fish & Wild Life Service. Located: Region I, Swan Island, Portland 18, Ore.; II, 220 W. Copper Ave., Albuquerque, N. Mex.; III, 1006 W. Lake St., Minneapolis 8, Minn.; IV, 316 Glenn Bldg., Atlanta, 3, Ga.; V, 1105 Blake Bldg., 59 Temple Pl., Boston 11, Mass.; VI, Box 2021, Juneau, Alaska.
CAA	\$ 700,000	Chief, Aircraft Control Division, Washington 25, D. C.
Other	N.A.	State, municipal, local governments and institutions.
	\$2,836,800	Total estimated annual expenditures.

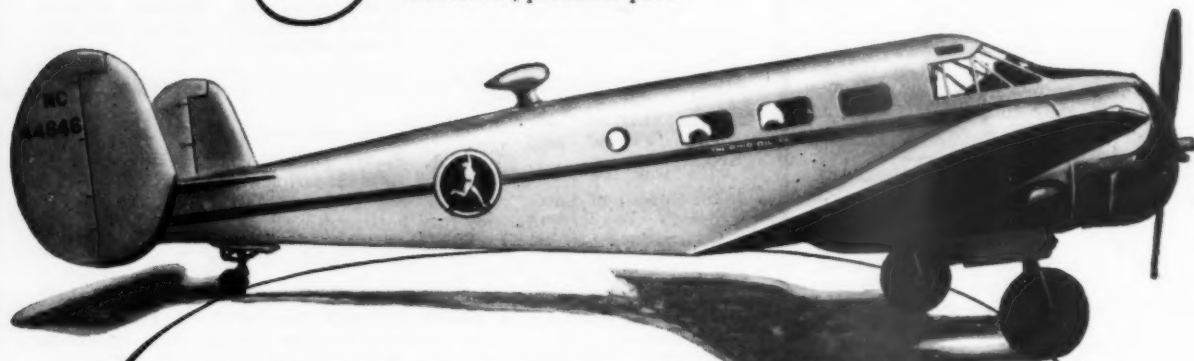


WAYS

Ohio Oil Company personnel save days, dollars...and energy

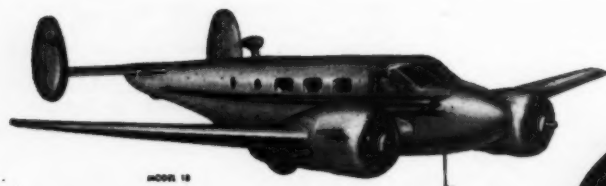
The Ohio Oil Company keeps nine Beechcrafts on the go—five Bonanzas, four Executive Transports.

States the manager of Ohio's aviation department: "It takes just four hours from Findlay, Ohio, where most of our Beechcrafts are based, to our division office at Tulsa, Oklahoma. In our fast-moving business, Beechcrafts let us set an efficient, profitable pace."



Beech "Twins" have proved themselves all over the world—in service of leading industries and the armed forces alike. Soundproofed cabin and custom-interior plans insure fatigue-free travel. Exceptional speed (maximum 230 mph) and any-season dependability give key

men unsurpassed ability to move—*fast*. For full information see your Beechcraft distributor. Or write to Beech Aircraft Corporation, Wichita, Kansas, U.S.A.



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Survey completed recently by Corporation Aircraft Owners Assn. shows that there are almost 1,400 multi-engined aircraft owned and operated by over 800 private companies, plus another 6,000 single-engined planes of a gross weight of 2,500 pounds and larger.

Breakdown of the multi-engined corporation aircraft is as follows:

222 DC-3's	604 Twin Beechcrafts
28 Lockheed 12-A's	10 converted Lockheed PV-1
17 converted B-23's	Venturas
25 converted B-26 bombers	113 Grumman Widgeons
146 Lockheed Lodestars	36 Grumman Mallards
13 North American B-25's	16 Grumman Goose amphibians
	150 twin-engined Cessnas

Included are approximately 100 multi-engined planes owned by aviation services and use principally for charter work in connection with business operations similar to that done by companies owning and operating their own planes.

issuance of maintenance contracts at Oklahoma City, Okla.

Forest Service

Forest fire control accounts for most of the department's usage through demands for other activities have increased. The Forest Service itself owns only 17 aircraft, but chartered many more. Last year 150 planes were chartered. Of the 10,548 total hours flown annually, over 5,400 hours were flown by chartered fixed-wing aircraft and 940 hours were flown by chartered rotor-wing aircraft. A conservative estimate of annual expenditures for maintenance and supplies for its own ships, plus rental fees for chartered aircraft would run approximately \$170,000.

In Oregon, where 933,000 acres were sprayed in 1950, the spruce budworm control program is continuing, half under jurisdiction of the U. S. Forest Service and half under the Oregon State Board of Forestry. A subcommittee in the House of Representatives recently authorized continuation of the spruce budworm project and concurred in a proposal to release \$675,000 from a contingency fund for this project.

Border Patrol

An agency that, apparently, hasn't been cultivated as well as it could have been is the Department of Justice, Immigration and Naturalization Service. Only 17 aircraft are used for its large job of policing the borders. These few planes are Cessnas, Stinsons, Bonanzas and a Grumman Widgeon.

Cost of maintenance and supplies for these 17 aircraft probably runs at least \$22,000 annually. Repair and service contracts are transacted with district directors of the service in Los Angeles, El Paso, San Antonio and Miami. A visit to these direc-

tors will eventually pay off in aircraft sales. Government trend is toward chartering rather than buying aircraft.

Civil Air Patrol

The airport operator who lures a CAP unit to his field is not unrewarded. Though some routine maintenance work is done by CAP members, parts, supplies and overhaul

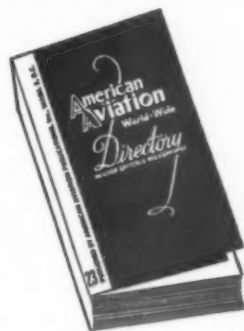
business for CAP planes goes to the operator. There are around 230 government-owned L-4 and L-5 type aircraft scattered across the country.

The military services have donated another 295 planes to CAP and well over 5,000 privately owned planes are affiliated with the CAP. The business potential and publicity gained from the 30,500 cadets between 18 and 19 years of age is increasingly important. CAP's National Capitol Wing has begun a trend in obtaining student pilot certificates for all cadet members. The 45,000 senior members also are not to be overlooked.

The squadrons operate like a large flying club with no flight instruction allowed, building up flying enthusiasm and background in the members. Gasoline sales are not small. CAP participates in 75% of all the nation's search and rescue missions. In 1949, over 9,200 official mission hours were flown. In 1950 over 12,040 mission-hours were credited. Items not included are local cadet hops, formation practice and proficiency flying done by CAP pilots. Private owners are reimbursed for gas and oil on authorized mission flying.

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Spring-Summer—1951

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CITY, ZONE, STATE

THE Washington View

By Vera Foster



THOUGH military authorities have made adequate provisions for the retention of certain employes in the vital crop-dusting industry, their directives have not been interpreted as originally intended. The California State Legislature sent one of its assemblymen to Washington to alleviate the situation before necessary farm services were terminated for lack of manpower.

Department of Labor has placed "airplane pilot, commercial," interpreted to mean airline pilots only, on its list of critical occupations. No nation-wide petitions have been received, labor claims, to place crop-dusting pilots on the critical list. This indicates that organizations at work gathering evidence on the essential nature of such pilots need all the assistance operators can give them.

Aircraft owner lists are available now at \$4 per thousand from the CAA. Lists are being prepared by state, and CAA has progressed through the alphabet past Idaho. These lists will give operators a lucrative direct-mailing list.

Civil Defense Agency has appointed Merrill Armour, assistant general manager and Washington counsel of the Aircraft Owners and Pilots Assn., to the position of Transportation Specialist-Air. This move has already resulted in a reworking of the state civil defense plan for civil aviation into final form, and should aid considerably in obtaining recognition of civil aviation's place in the defense picture.

Flying clubs, long an airport stepchild, take on a different light when a survey of foreign flight training programs shows state-subsidized flying clubs the chief means of building up a pool of trained personnel. Flying clubs are money-makers too. A club ship naturally gets more intensive usage than a single-owner plane. Operators say that a conservative estimate of income from a 65-hp plane owned by 10 members runs at least \$1,000 annually, plus the sale of the plane.

The MacArthur hearings are delaying action and hearings on aviation bills now before Congress. Both House and Senate report no hearings scheduled on the Airman Training Bill or the ROTC training bill.

The aviation education bill introduced in April, HR 3467, to provide flight experience and aviation courses for high school seniors, has not had time to get under way. Agencies have been written for comment. No move has been made in the Senate toward introducing a similar bill.

A bill, HR 3914, authorizing the expenditure of not over \$8,000,000 for the design, development and construction of an aircraft suitable for local service airlines, was introduced in the House May 1, and referred to the House Interstate and Foreign Commerce Committee.

The Aerocar is now for sale by Moulton Taylor, designer and builder of the auto-airplane. A few Aerocars are to be offered at \$12,500 each. The interesting vehicles should earn returns for owners in the form of publicity and advertising value, as well as transportation. A year's guarantee of all parts goes with each Aerocar. If a part needs replacement and the plane is brought to the factory, the labor as well as the parts will be free.

It's a good idea to have a chat with the local fire chief occasionally. Fire fighting techniques for aircraft, hangar and gasoline fires could be planned and equipment at the airport and fire station compared. The importance of this is apparent when considering that dry chemical, usually a finely ground baking soda, cannot be used over "fog foam" chemicals without counteracting its effect, and that some types of fog foam that look alike have a different chemical base and used together render both useless. Compare notes before the fire.

has about 50 planes around the country. Last year the service was authorized to purchase four additional ships and six replacement airplanes. As new uses emerged the service fleet grows. Planes are used now for patrol, observation, inventory, law enforcement, spraying, seeding and aerial feeding. The type of plane used runs from a Piper J-3 to a Grumman Goose.

Contracts coming up in June and July will specify, mainly, hourly rates for labor and discounts. The service seems to prefer four-place ships such as the Piper PA-18 and Cessna 170. An estimate of annual expenditures for supplies and maintenance is from \$50,000 to \$60,000. For information write Regional Director, Fish and Wild Life Service.

CAA

The Civil Aeronautics Administration last year rented from 220 to 230 aircraft from 200 contractors. No per-hour, per-plane figures on rental were available but the "average price per hour," CAA says, is \$14.00.

About 60% of the planes rented were four-placers, with a few five-place ships and helicopters. The remainder were two-place, fixed-wing aircraft. All were single-engined models. A figure of about \$8.00 per hour for two-place ships and \$18 for four-place which may be close to actual rental rates.

One type of contract is for 150 hours a year wherein, if convenient, the operator may not need to assign the plane to CAA full-time but just make sure that it is available when needed. Another type of contract is for 200 to 250 hours a year. With this contract the operator usually finds it best to assign the plane to CAA full-time.

The CAA-chartered planes are evenly spaced cross the U. S. and are used for proficiency, familiarization, as well as the many hours of flying necessary to keep close-knit, airport-to-airport itinerary schedules. CAA finds only multi-engine planes, equipped for radio facility checking, economical to own. The electronic equipment which must be installed in these ships precludes a reasonable rental figure. A rough guess at CAA's annual expenditure for aircraft is approximately \$700,000.

The chief of the Aircraft Control Division, CAA, Washington negotiates the contracts.

Local Governments

Local and state governments have become more interested in the use of aircraft for carrying out their responsibilities. Miami and New York are among the large cities presently using aircraft. Other local governments are expected to follow the trend.



Cross-Country

WITH LOCAL OPERATORS

By Page Shamburger

MISSISSIPPI—With Ben Cole as resident director, **California Eastern Airways** is getting into full swing training Air Force students in T-6's at Columbus. Stay away from there, transients, unless you call in advance. It's the only field in Columbus, and the city is floating a bond issue to build another airport. **Southern Airways** is having to use the air base at present. **James McLachlan**, Cal Eastern's director of maintenance, is getting the T-6's rolling. **E. Van Lloyd** has the headache of procuring qualified flight instructors.

With the modern cadet barracks, swimming pools, etc., to rebuild in such a short time, Cal Eastern has got a tough job, and this should be realized by anyone interested in schools of this nature. The Air Force standardization course at Craig Field has been a chore to the instructors, with more than a few falling by the way. Such a school is not all cash and joy . . . it's a hard job.

If you have necessary business at Columbus, suggest you call either Cole or the CO, **Colonel Garnet B. Palmer**. If the business is not imperative, suggest you stay many miles from the vicinity.

W. D. Ellis on **Meriden Municipal** tells a bright story of one place not charging operators terrific rents. **Key Brothers Flying Service** is the outfit with **Fred Key** as manager and brother **Al** still in the Pentagon's Army. The two Keys set an endurance record in '35 by staying up for 28 days, and Meriden considers 'em the fathers of aviation. The airport's making money, too, and is truly a busy one with National Guard activities. Forestry patrol is a big thing, though seasonal, averaging about 30 hours a month.

Ed Maxwell is the genial manager of **Greenwood Municipal**. They have no operator but the city and Ed see to it



Ruston Municipal Airport administration building, Ruston, La.

you get servicing. Ed's been the manager since '47 and says the airport makes a little money for the city each year . . . and the transient trade is good. The airport's right on the edge of town and has lights. During duster season, hangar space is impossible to get, for there are between thirty and forty planes based there then.

T. B. Buckles' Natchez Airpark in Natchez is the kind of airparks dreamed of right after the war . . . It's close to town, and the sod's just like velvet. The lounge, hangar and entire airport grounds are well planned and beautifully kept. **Duane Fern's** the manager, and he sees to it your servicing and needs are well handled. Duane has no students but there are a number of planes used for business based here and that maintenance keeps him busy full time. There's a lot more interest in flying in Natchez, so he says, but the lack of cash keeps the activity down.

Augustine Airport in Madison, just north of Jackson, is managed by **Frank Hope**. Frank's been on Augustine since the days it was a surplus storage base. Augustine was a sales depot, too, with 1,000 mixed breeds of ex-Army planes. There're still a few skeletons around, and they surely look peculiar from the air. Frank says his business is very poor . . . he has great hopes on the dusting season this year, though.

Frenchy Jacobs on **Jackson Municipal** is an all-out maintenance and repair man. He says he has a full shop all the time, and much more business than he can handle. He's a dealer or distributor for almost all kinds of parts and accessories and handles the businessman's plane, mainly. His gas and storage facilities are mainly for convenience of his customers, but he gives good service to transients, too.

The other operation on Jackson Municipal is **Tom Rush's Dixie Air**. Tom specializes in instruction and charter and says his biz is good. The GI's are really showing interest now that their time is getting short and Tom expects to have 50 approved students by June. He says the students are "the best crop he has ever had and less than one out of every ten is drawing subsistence." Most of his students, including GI's, can afford planes and use them in their businesses.

♦ ♦ ♦

LOUISIANA—**Alexandria Municipal** is filled with Air Force now, so advise all you cross-country pilots to stay out. **Gordon Baker** has a nice sod, one-strip field in town, though, and gives good service. It's known as **McArthur Drive Airport** with **Hub City Air Service** as the name of the operation. The little field is only 75c from town and easy to find—the Joy Drive-in Theatre is right off the end of the runway.

Joe Joseph of **Monroe Airport Service** on Monroe Municipal is doing a bang-up job on maintenance, service and storage. He's got a DAMI and one of the very few approved to license dusters under CAR Part 8. Joe says he really gets the duster business, too. He doesn't think people are flying as much this year as last but says the bad weather may be the blame. Seems Louisiana has had one of the worst winters in years, and everyone's hoping for a good summer.

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LETTERS

(Continued from Page 8)

Does this survey indicate severe competition? To me it indicates that the irregulars have tapped a new market and developed it on their own initiative. Not only have they introduced air travel to many, but they have provided business for the scheduled airlines in "off-line" points not served by the irregulars. The passenger traveling to Cleveland via an irregular carrier will be routed through Chicago on the coach and via scheduled airline to Cleveland. He certainly is not going to travel the remainder of his route by rail or bus.

By AMERICAN AVIATION's own admission (AMERICAN AVIATION, April 15, 1950, p. 84) the irregulars carried only 1.8% of the passengers carried by scheduled domestic carriers. Severe competition? . . . What is all the hubalaloo?

BILL KOOSMANN
Los Angeles, Calif.

Four-Place Training

To the Editor:

I was interested to read your comments in the March 19 edition of AMERICAN AVIATION on the four-place training which has been successfully used at Showalter Airpark, Florida. As you may know, I have been vitally interested in the program of improved and realistic training ever since we attempted the first experimental cross-country course at Ohio University under the joint sponsorship of the Ohio Aviation Board, the University and the Civil Aeronautics Administration.

The experience of Showalter indicates that the success of such a program is up to the individual flight school. While it is difficult to place your finger on the reasons for the apparent failure of the majority of operators to make use of this method of training, I would like to offer for your comments some of my own thoughts on the matter.

First, most of the operators who can afford four-place aircraft have become so accustomed to selling to the government that they lack faith in the fact that they have anything the public really wants.

Second, our training has emphasized maneuvering the airplane for pilot proficiency rather than using the airplane for experience in personal transportation.

Three, most operators emphasize the training aspects of the program rather than the idea of transportation to interesting spots where the students have always wanted to go. We have suggested that flight schools sell this program with the aid of three maps which should include an area of approximately six or seven hundred miles from their base. One map could show well-known and interesting golf courses; another could indicate fishing spots and the accommodations that were available; the third could show scenic and recreational areas. All of us look forward to the activities that take us over the hills, into other states or to places that we have read about and haven't seen. These maps could be combined in any way that would fit the group. Enjoyable and worthwhile transportation would be the primary selling point! The instruction which would tie-in experience and observation and result in the acquisition of a pilot's certificate would be the bonus.

The fourth difficulty that operators experience is probably that of contacting the people who would be most likely to take advantage of such a course. There would be the members of country clubs and athletic clubs . . . doctors, dentists and business men, whose schedules are flexible enough to allow them to do the things they want to do. Everyone who has operated has had the experience of scheduling a business man for a flight lesson, only to have the lesson called off because of unexpected appointments. These same operators should realize that business seldom interrupts a fishing trip or a golfing date!

Another difficulty which presents itself to the operators is the scheduling of the aircraft and the allowance for the overnight trips that are necessary. This difficulty, I believe, would be over-balanced by the additional airplane sales to students and the greater use of rental aircraft. Apropos of renting aircraft, I often wonder whether flight schools ever expect or wish to see their students after they have had their license.

C. E. A. BROWN
Director of Aviation
Ohio Aviation Board
Columbus, Ohio

WINGS OF YESTERDAY

25 Years Ago

Postmaster General New awarded the Douglas Company of Santa Monica, Calif., a contract to build 40 planes for use in the government-operated transcontinental air mail service between New York and San Francisco, at a cost of \$11,900 per plane.

The War Department's plan for a five-years aviation building expansion program costing \$150,000 was unanimously approved by the House on May 5, 1926. A similar bill for Naval air development costing \$85,000,000 had also been passed by the House.

National Air Transport inaugurated mail and express service between Chicago and Dallas on May 12, 1926, with the first day's traffic so heavy two planes were needed to carry mail over both north and southbound routes.

Ten Years Ago

(In AMERICAN AVIATION)

U. S. took steps to combat German and Italian infiltration into South American commercial aviation with a new government corporation to offer capital and aid to Latin American countries.

Plans were completed to train 7,000 RAF pilots in U. S. civil contract schools.

Igor Sikorsky set a new record for sustained flight in a helicopter of one hour 32 minutes.

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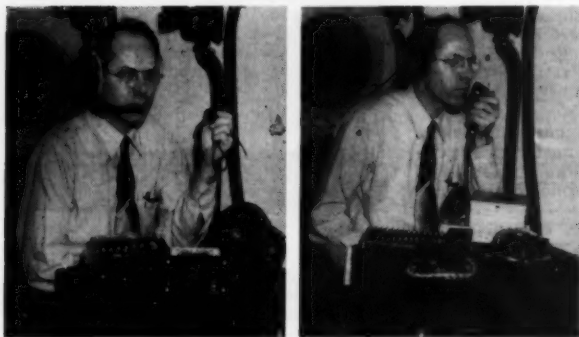
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IN FLIGHT

A PAGE FOR ALL PILOTS



DESIGNED to replace all sets now in military aircraft use, this new intraplane communications set (left) is said to eliminate 95% of the distortion and fading experienced with current types (right). Also note new functional arrangement, improved head bands, ear-phone covers, boom type microphone. System was designed by RCA Laboratories in cooperation with Air Materiel Command.

Less Hash on Intercom

Voice distortion and fading in the intra-plane communications systems will be reduced as much as 95% by a new system designed by the RCA Laboratories in Camden, N. J., under the direction of Air Materiel Command engineers. The results should be pleasing to pilots and other crew members. RCA and AMC engineers have redesigned the complete head gear to provide for greater comfort while improving the operational characteristics of the set.

Changes in the system include use of small amplifiers at each crew station instead of one big central amplifier, increasing the frequency range and utilizing a moving coil dynamic microphone and earphones instead of the carbon mike and magnetic diaphragm earphones now in use. Sets now operating in the 300-4,000-cycle-per-second range often fail to make clear the letters "s," "t," "f," "p," "b," and "d" but the new sets in the 250-8,000-cycle range will overcome this shortcoming. Distortion in general is particularly acute at high altitudes.

Both microphones and earphones have been redesigned to employ noise-cancelling techniques which almost completely eliminate distant sounds such as engine and propeller noise. From a comfort standpoint the earphones have been built up of a plastic shell, and glass fibers covered with latex. A nylon cap (see photo) covers the bare rubber eliminating some objectionable features of the old set. The earphone metal headbands are also modified for greater comfort and the microphone has been boom-mounted for convenient use.

Navion Clinics

Ryan Aeronautical Co. has launched a new series of "clinics" for Navion owners. Both maintenance and flight techniques will be discussed with owners, operators and mechanics—William P. Sloan, Ryan sales demonstration pilot, and Walter K. Balch, airplane service mgr., will tour Texas and Louisiana first with free inspections and flight technique demonstrations. Lycoming representatives will accompany the Ryan men at stops in Austin, Corpus, Christi, Houston, Ft. Worth, Amarillo, and El Paso, Texas, and Shreveport, La., to give free ground and air checks to Navions.

Kids Scuttle the Skycar

Bill Stout, designer of the Ford Trimotor and the Stout Skycar, got together recently with Paul Garber, curator of the National Air Museum. The result was that the prototype Stout Skycar, an all-metal flying automobile built in 1933, was to be donated to the Air Museum.

Out in Detroit, the university keeping the Stout Skycar had parked it in a professor's back yard. The children adopted it as a new toy. One of the children managed to get scraped on the Skycar so their mother refused to give the wistful little ship yard-room.

Garber arrived in Detroit too late. The historic flying auto had been relegated to the junk yard and only a few scattered bits were left.

Bill Stout, out in Phoenix, refused to let this detail alter his plan to donate the Skycar. He built another one. The copy of the Skycar is now said to be flying and soon to be delivered to Garber.

Lightplanes in the Common System

Lightplanes may not be required to carry any Common System airborne equipment, John M. Chamberlain, CAB's director of the Bureau of Safety Regulation, has indicated. Principal question, he said, is what airborne equipment must any airspace user install in order to fly at all. Some aircraft, he stated, typically fly so low, so locally and so far from communications points and control areas "that they could not be effectively controlled if they were equipped." It would be possible, he indicated, to provide ample free space to permit the normal use of these aircraft, perhaps even in some enroute areas at the lower altitudes. Types of aircraft which will need to be fully equipped will be for the most part airline aircraft.

New Records Established

New Records have been made recently. Mrs. Ana Louisa Brangere, an attractive Venezuelan pilot weighing in at 87 pounds, set an international altitude record of 26,820 feet in the under-1,103-pound category in April. This record does not effect Caro Bayley's altitude record of 30,203 feet at Miami in January in the 103-2,206-lb. category.

Mme. Jacqueline Auriol, daughter-in-law of the French President broke the world women's aviation speed record set by Jacqueline Cochrane. The record was made May 12 in a modified Vampire fighter of the French Army. Mme. Auriol is making a comeback after recovering from a crack-up two years ago.

The women did not monopolize the record-making however. Max Conrad, a professional pilot (he flies a Minneapolis-Honeywell Co. executive plane), cut seven hours and 43 minutes from the previous unofficial, cross-country, nonstop flight record. In his Piper Pacer he made a new record of 23 hours, four minutes and 31 seconds on May 14. Conrad, the father of nine children by the way, flew the Atlantic in a lightplane last year.

Conrad's Pacer was a flying gas tank with two big cabin tanks to add 120 gallons to the normal fuel capacity. He also carried six five-gallon cans from which he transferred fuel to the wing tanks by a hand-pump rig. To force oil into the engine in flight he had a home-made system using a gas stove air pump.

BOEDY'S ALBUM



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Aero Digest
Cleveland, Ohio, 9/3/39



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September 3, 1939



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September 4, 1939



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September 4, 1939



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September 4, 1939



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BOEDY'S ALBUM



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Pratt & Whitney
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R. H. "Bob" Ellis (QB)
National Air Races
Cleveland, Ohio
September 4, 1939



Dale Riblet (QB)
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Cleveland, Ohio, 9/4/39



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Ben. I took an immediate liking to Ben Gaston.

It was on a hot January day in an air-conditioned office building in downtown Manila when the door opened and this tall Filipino in white tropical suit with open-collared shirt walked in and shook hands.

His smile was broad and genuine. His features were quite unlike those of the average Filipino, they were carved out of the basic sort of stuff which makes for character. His eyes had something of the sad pleading look that one finds in East Indians. His skin was dark, but it was the darkness of the South Seas, not of Africa.

Ben gave me a warm welcome to the Philippines but wasted no time in begging me not to judge the islands from what I had seen in Manila. Come down south, he said, and I would find peace, contentment, hospitality, and real living. Down south, he said, was the real Philippines.

It didn't take me long to realize that Ben Gaston was a fount of knowledge about the islands. Out poured everything from homely philosophy to a broad understanding of politics, economics, agriculture, international relations—and a crusading tenseness to get me to see the prosperous islands of the southern part of the archipelago.

Racial Mixture. And so started a friendship with Ben Gaston. The dividends to traveling about the world came in the form of the good sincere people you meet, the people who are anxious to provide hospitality. I know



that Ben Gaston would give me the shirt off his back. I know that if I got in trouble he would provide a genuine haven. He's that sort of a guy.

I was to find out in due course why Ben was such an intriguing character. He's as cosmopolitan in make-up as any man I've seen. He has Spanish, French, Chinese, East Indian and Malayan blood in his veins. This mixture has brought about extraordinary facial characteristics—just a slight uplift of the eyebrows, the touch of sadness in his eyes, an over-all physiognomy of

the west, and a blending of pigmentation that is almost satin. He is a happy man, intense in his thinking, and highly intelligent—exceptionally so.

Bacolod. Down south, Ben lived up to the advance build-up. It was he who arranged local receptions, because Ben is known as a leader over a wide area. He's a special representative for Philippine Air Lines, but he owns a bus company, has been active in politics, and was active in the underground during the Jap occupation. He's fiercely proud of the Philippines. And his sister, **Conchita**, has been a big-time TV and radio star in New York and pos-



sesses a very excellent singing voice praised by critics over the U. S.

After roaming around the southern islands for three or four days, our party ended up one night in Ben's home town of **Bacolod** on Negros Island. Bacolod is the center of the sugar cane region. It's a town of perhaps 10,000. We all stayed in Ben's big, rambling house. His family is large. Kids and dogs were all over the place but it was the kind of house where the welcome mat is out—there's always room for more.

Ben had arranged for us to see some local color that evening and had invited in quite a few people to meet the visitors from the U. S. It was quite warm. The ladies fanned themselves, we had lots to eat, and the entertainment was fascinating. Several troops of kids put on a program of dances and there was some singing.

Tinikling. By all odds the top feature was a dance called the **tinikling** dance, native to the Philippines. Two children squat on the floor holding the ends of two bamboo poles. These poles are a couple of feet apart to start with and two other children step inside. As the dance starts the poles are clacked together in rhythm while the dancers lift their feet just in time to miss the poles by split seconds. Like skipping a rope. All sorts of dance

combinations can be worked up but it's no easy thing to avoid getting your feet caught as the poles move together. A piano provides the music accompaniment and the poles make quite a clack as they come together.

These kids were really good but it looked easy until, inevitably, my wife and I were called on to try our hands



at tinikling. After a few seconds I was so mixed up that I was getting my feet caught and finally sprawled on the floor in bitter defeat. Everybody got a huge kick out of this—the Americans who were clumsily trying to learn the **tinikling** dance.

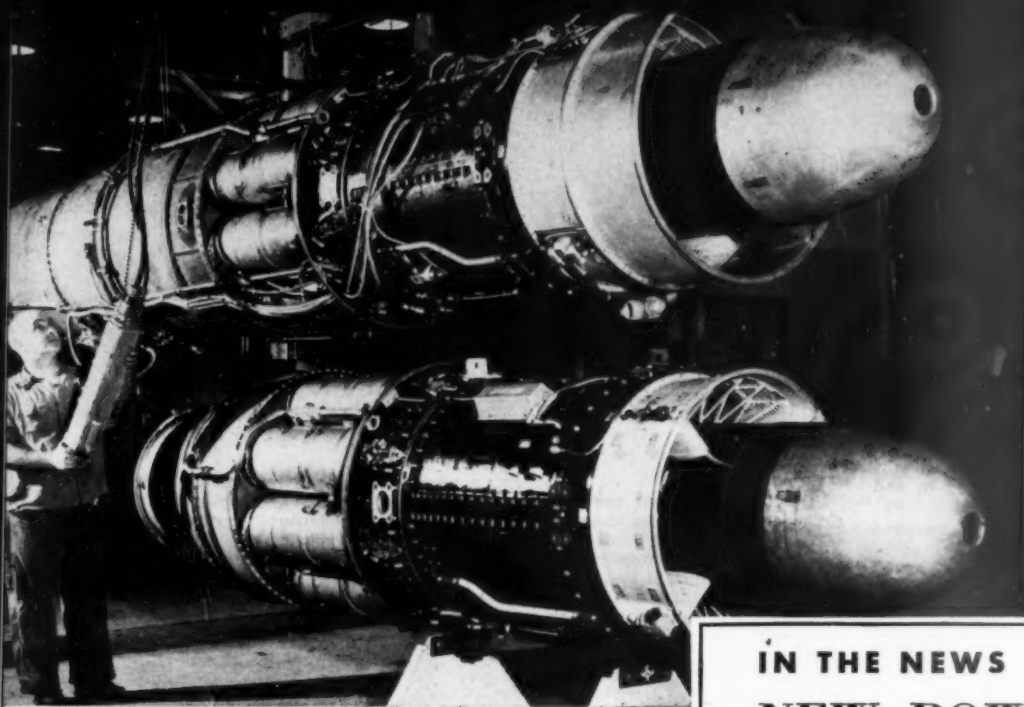
It was a gay occasion. And down in this little town on Negros Island was the beautiful voice of Conchita Gaston singing out on this hot tropical night. She has one of the really fine singing voices of the world. There aren't many occasions in a lifetime like this.

Hong Kong Next. Bacolod was our last stop in the southern islands. The next morning we hopped on a PAL DC-3 and shot back to brash Manila to get ready to move on to Hong Kong. But I'll never forget the warmth of welcome in those southern islands, and Ben Gaston, true crusader for freedom and independence. In those Philippine islands today one finds the same kind of fighting spirit for independence that gave our own country its freedom over 150 years ago. Ben Gaston, the product of the merging of a half-dozen races, is one of the foremost disciples.

When I get depressed about things, I'm going out to see Ben Gaston. He's a cure for all ailments. More power to him.

Perhaps at this point I owe an explanation to readers of this page about my travels. I returned to U. S. A. from the round-the-world trip on February 12, but the writing lags far behind. Next issue I'll be writing about Hong Kong, then Singapore, Bangkok and New Delhi. I have enough notes on hand to keep up this page for a year.

The Philippine Republic is a country in which Americans should take a lot of interest. We've nurtured the Filipinos from colonialism under the Spanish to independence. They have a pleasant country, those 7,000 islands, but they need economic help and rehabilitation from a devastating war. They need hotels, among other things, before their attractive country can be prepared for tourists. But it's a thoroughly delightful place to visit if you don't expect too much in the way of luxury living.



J47-17 reheat engine (upper), one of new engines now in production at G-E's Lynn, Mass. plant, features integrated electronic fuel and jet nozzle system for completely automatic control of engine and afterburner. New fuel system is designed for operation at 50,000 feet; opposite polarity ignition allows starts at that altitude.

IN THE NEWS

NEW POWER NEW RESEARCH NEW RECORD

Designed to suit your specific needs, turbojets, turboprops and turbosuperchargers are available at General Electric. This complete line of aircraft gas turbines is backed by forty-five years of experience. Specialists in every phase of aircraft gas turbine work assure you

of quality and dependability. For aircraft powerplants that are constantly being improved, call your General Electric aviation specialist or write Apparatus Department, General Electric Company, Schenectady 5, New York.



Water-cooled periscope lets G-E engineers look directly into hot exhaust gases in jet tail pipes. Study of these burning gases is invaluable in the improvement of aircraft gas turbines. Research tools such as this are constantly being developed at G-E to give you better power.



World endurance record was set at Selfridge AFB by this North American F-86 powered by G-E J47. Plane landed every two hours for refueling but was operated continuously for 23½ hours. Civilian on wing is representative from widespread G-E service organization.

AIRCRAFT GAS TURBINES

GENERAL  **ELECTRIC**

210-21

NEWS SECTION

(Continued from opposite page 3)

the Deputy Chief of Staff, Materiel, the DCS-Controller, the DCS-Operations and the Air Materiel Command. Stone will be responsible to Lt. Gen. **K. B. Wolfe**, DCS-Materiel.

Training Contracts: No more contracts will be awarded to mechanic training schools during the rest of this fiscal year. So far the Air Force has awarded 19 airman training contracts to civilian schools. A decision is also expected soon on the civilian operation of the two basic flight training schools.

Transportation Directorate: Maj. Gen. **W. E. Farthing** will head the new USAF Directorate of Transportation, which has been created from the old transportation division. The organization will handle all Air Force traffic and transportation policies.

Bid Advertising: Procurement orders amounting to \$10,000 or more will be publicized in advance by Army, Navy and Air Force procurement offices and in synopsis forms issued by Department of Commerce. Negotiated and formally advertised contracts will be broken down into small lots so that small business can participate.

Procurement Clinics: The armed forces will hold more procurement clinics as a result of past successes in lining up subcontractors. During the recent "Operation: Small Business" in Chicago 28 Air Force contractors discovered 4,579 potential suppliers and made plans to let 342 subcontracts.

Air Force Academy: Seven sites are still being considered for the Air Force Academy. Included are locations at Randolph AF Base, Tex., Camp Beale, Calif., Colorado Springs, Charlotte, N. C., Madison, Ind., Grapevine, Tex., and Grayson County, Tex.

MATS Committee: Five airline officials are among seven Military Air Transport Service reserve officers who are on a month's duty to help plan MATS' program for mobilizing civil aviation in case of war. Brig. Gen. **Ray Ireland**, v. p.-traffic administration for United Air Lines, heads the committee.

AIRLINES

U. S. Denies Bankruptcy: U. S. Airlines, certificated cargo carrier, denied reports that it had entered bankruptcy petition but said that it had asked Federal District Court in Miami for an arrangement with creditors under Sec. 77B of Bankruptcy Act. U. S. proposes to pay creditors 5% per month until bills are fully paid. **Ralph W. Starkey**, executive vice president and general manager, said that company is expecting additional financial backing. Meanwhile, agreement was filed with CAB under which U. S., because of "seasonal let-down" over north-south routes, will lease three of its six C-46's to Slick Airways. Agreement also calls for maintenance of all U. S. planes by Slick, ground operating service by Slick at all jointly-served points, and sales service by Slick "at any time requested" by U. S.

WIS May Buy MWA: Discussions are being held looking toward possible purchase of Mid-West Airlines by Wisconsin Central Airlines. Two local service carriers meet at Minneapolis and each covers segments of the midwest. MWA had agreed to sell to Continental Air Lines for \$70,000 and it is believed this price still stands. CAL deal was dropped when CAB refused to consider it along with MWA certificate renewal. WIS would use DC-3's instead of MWA's single-engined Cessnas. Company is negotiating for one to three more DC-3's; its six Lockheed Electras were sold to a Detroit broker for \$135,000. It may also move headquarters from Madison to Milwaukee due to increased Air Force activity at Madison.

Charter Rules: Rules have been issued by CAB outlining procedure to be followed by U. S. air carriers desiring to fly off-line international or overseas charters in areas served by U. S. certificated flag carriers. Carrier must file petition with CAB listing proposed date, number of trips planned, area or points to be served, type of equipment, passengers or cargo to be carried, pay to be received, and copy of proposed agreement. Copy must also be served on U. S. airline serving the area. Latter has five days to object and 10 days to file supporting documents. Objecting line must also submit statement of its ability to handle the traffic and may submit terms upon which it would perform the service.

PAL Dispute Settled: West coast sources state that dispute between Col. **Andres Soriano**, president of Philippine Air Lines, and government representatives on PAL board has been settled to satisfaction of Soriano. Reports are that government will sell enough of its stock to PAL employees to reduce its share of ownership from 52% to 48%. In due course, government will sell all its stock, leaving airline in hands of private owners. Soriano and all officers resigned a few weeks ago in protest over interference in airline affairs by government directors.

AA's Replacement Cost: Replacement cost of the operating equipment now in service on American Airlines is \$63 million greater than original book value, **C. R. Smith**, AA president, states. "This means," he added, "that the company must provide \$63 million more than is presently derived from the depreciation reserved to provide for the full replacement of existing fleet."

Gardner Named: **George Gardner**, president of Northeast Airlines, is serving as director, on a part-time basis, of the Air Transport Division of the civil aviation mobilization set-up, under Gen. **Donald Connolly**, special assistant to Undersecretary of Commerce **D. W. Rentzel**.

New EAL Vice Presidents: **Charles Froesch**, Eastern Air Lines' chief engineer for 16 years, has been elected vice president-engineering, and **Joseph H. Brock**, a 20-year veteran and since 1947 director of industrial and personnel relations, has been named vice president-industrial and personnel relations.

Dyer Leaves Arinc: **Frank Dyer** has resigned as vice president in charge of engineering for Aeronautical Radio Inc. and will join Collins Radio Co. at its new Dallas plant in June. Dyer was credited with numerous developments valuable to airline communications. A new Arinc president to succeed **G. A. O'Reilly**, resigned, will be announced soon.

People: **Walter H. Johnson, Jr.**, American Airlines' eastern regional vice president, elected secretary of AA and assistant to president. **C. W. Jacob**, who has been vice president, secretary and assistant to president, retains the title vice president, and **T. P. Gould**, passenger sales director, takes over Johnson's former post. **James M. Eaton**, director of properties for Pan American World Airways' Atlantic Division, has announced his retirement. He was founder of American Export Airlines which later became American Overseas Airlines and then was purchased by PAA.

CIVIL AERONAUTICS BOARD

New York-Balboa Case: Participation by Panagra in proposed PAA-Eastern interchange and a National-Braniff interchange at Havana are issues to be considered in recently-instituted New York-Balboa Through Service Proceeding, CAB ruled. Proceeding

grew out of NAL Dismemberment Case and previously included possible New York-Latin America interchanges via PAA-Eastern, Braniff-Eastern, and National-Panagra. Expansion was requested by Pan Am, Eastern, and the Pan Am nominees to Panagra's board of directors. Before case gets underway, however, CAB will hold oral argument on petitions for reconsideration of tentative decision approving temporary National-Panagra interchange.

Claims Overpayment to C&S: CAB proposes to recapture about \$733,000 of Chicago and Southern Air Lines' past international mail pay and to set future rates which will result in annual pay of about \$1,855,000. Recapture of alleged overpayment will lower to \$3,645,000 C&S' total pay for period Nov. 1, 1946, to Dec. 15, 1950, during which DC-4's were used.

Praise for SWA: Praising Southwest Airways' request for lower mail pay, CAB proposes to cut carrier's rate from 40.83c to 33.49c per mile beginning May 1, 1951. New rates, substantially as requested by SWA, mean \$115,000 cut with future pay estimated at \$829,000 yearly. Board called carrier's action "exemplary" and commented on "good faith" of its management.

Favors WCA Renewal: CAB Examiner J. Earl Cox recommended renewal of West Coast Airlines' local service certificate until November, 1954, but favored dropping line's Seattle-Bellingham segment. He opposed transfer of Salem, Bellingham, Bend and Klamath Falls from United Air Lines to WCA. Latter is awaiting CAB approval of plan to merge its routes into Southwest Airways' system.

AAA Extended: CAB extended All American Airways' Washington-Atlantic City local service route to New York/Newark via Asbury Park/Long Branch/Monmouth Beach, N. J., effective from July 9, 1951 to Jan. 11, 1952, expiration date of AAA's certificate. Also approved was summer operating pattern permitting non-stop from Washington or Baltimore to Georgetown-Rehoboth Beach, Del., and service to Atlantic City as co-terminal with Wilmington, Del.

PO Asks Star Route: Post Office Dept. has asked CAB clearance of an air star route, probably using light planes, from Cortez, Colo., to White Canyon, Utah, via Blanding, Utah, 104 miles. Three flights weekly will be required with mail load per flight not exceeding 300 lbs. CAB must certify that proposed route won't conflict with certificated routes.

ACTIONS

• **Mid-Continent Airlines' Route 26** certificate amended to include Lincoln, Neb., as an intermediate between Omaha and St. Joseph for three-year period. Award is effective July 15.

• **Ozark Airlines** directed to show cause why mail pay should not be increased by about \$278,000 for past period and set at annual figure of approximately \$1,800,000 beginning June 1. Additional back pay would be \$72,500 for period Sept. 26, 1950 through Feb. 28, 1951, and \$206,000 from Mar. 1 to May 31.

• **Youth Argosy** granted further "temporary relief" to arrange for trans-Atlantic travel for members who had contracted for such travel subsequent to Mar. 23. Originally, Board limited authorization to those who had signed prior to Mar. 23. But possibility of available space on planes operated for those originally authorized led Board to relax restrictions. No extra flights may be operated, however, to accommodate the late signers.

Applications and Petitions

• **Pan American World Airways** applied for authority to serve Casablanca, French Morocco. Request was amendment to November, 1949, application for right to operate between Lisbon and Dakar, French West Africa. Under new proposal, Casablanca would be served as an intermediate between Lisbon and Dakar, but PAA also seeks non-stop rights between U. S. and/or the Azores, on one hand, and Casablanca.

Northwest Airlines applied for extension of exemption which permits service to Taipei, Formosa, as an intermediate point on its Pacific route.

• **Northeast Airlines** wants exemption for summer season (June 15-Sept. 30) to permit service between New York and White River Junction, Vermont, with intermediate stop only at Keene, N. H.



FINANCIAL

Manufacturing

The Glenn L. Martin Co. first quarter net loss \$5,832 against \$34,652 profit in same 1950 period. Loss attributed to present expansion for planes to be delivered later this year and in 1952. Backlog at end of April exceeded \$400 million against \$195 million at beginning of 1951. Company has borrowed \$4,680,000 from Reconstruction Finance Corp. and Mellon National Bank and Trust Co., bringing total borrowings from these sources to \$13,057,181.

Bendix Aviation Corp. first quarter net income \$2,890,152 against \$3,563,685 in same 1950 period.

Piasecki Helicopter Corp. reports 1950 net income of \$151,000 on \$6,529,000 sales, against 1949 net of \$106,000 on \$5,022,000. Backlog is now about \$100,000,000.

Cessna Aircraft Co. established \$10,000,000 line of credit with Fourth National Bank in Wichita, Chase National Bank, and Trust Company of Chicago. About \$6,500,000 has been borrowed so far.

Reliance Manufacturing Co. first quarter net \$136,791 against \$66,932 net last year.

Airlines

Chicago and Southern Air Lines first quarter profit \$224,327 against \$72,715 loss in same 1950 period.

Piedmont Aviation reports 1950 earnings of \$81,636 against \$61,137 loss in 1949.

TWA borrowed additional \$700,000 from Mellon National Bank & Trust Co. on 3% promissory note due Apr. 30, 1955. Company now has \$12,000,000 outstanding under credit agreement with six banks. Funds are to finance equipment program.



LABOR

ALPA Represents SWA: Bargaining representative for Southwest Airways' pilots will be Air Line Pilots Association, following dissolution of Southwest Airways Pilots Association, independent union which for last four years has represented SWA.



CIVIL AVIATION

CAA Appoints: Frederick B. Lee, who has been CAA's deputy administrator for program planning, has been named deputy director for operations, the No. 2 job in CAA. The position has been vacant. **John M. Beardslee**, former deputy to Charles F. Horne, was appointed director of Office of Federal Airways, and **J. H. Tippetts**, who has been chief of maintenance engineering division, was named his deputy.

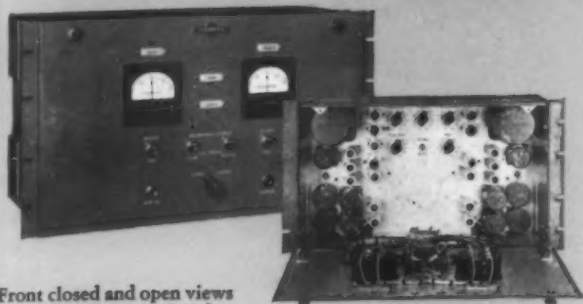
Stovall Heads AMA: Aero Medical Association at annual convention named Dr. W. R. Stovall, chief of CAA's medical division, as president-elect. He takes office in 1952, succeeding Maj. Gen. Harry G. Armstrong, Air Force Surgeon General.



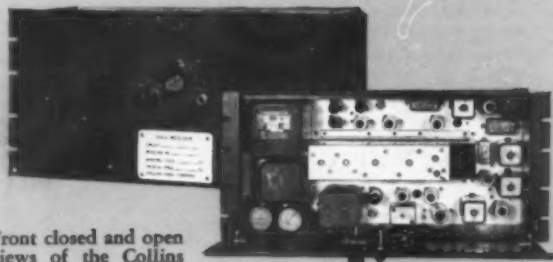
AROUND THE WORLD

Chennault Loses: Gen. Claire Chennault's claim to 40 transport planes which he said he bought from Chinese Nationalists through Civil Air Transport, was rejected by Hong Kong Supreme Court judge, and planes were awarded to Chinese Reds. Chennault will appeal the decision.

FOR RELIABLE RADIO PRINTER COMMUNICATIONS



Front closed and open views of the Collins 706A-2 frequency shift converter



Front closed and open views of the Collins 51N-5 receiver



Front and rear views of the Collins 709D-1 frequency shift keyer

Here are three basic Collins units for maximum performance and complete dependability in frequency shift radio receiving and transmitting applications.

The 706A-2 converter is designed to operate from the outputs of two 51N-5 receivers arranged for diversity reception of radio printer transmissions. In practice, both receivers operate on the same frequency within the range of 2 to 24 megacycles. However, each derives radio frequency signals from a separate directional antenna.

The 706A-2 converter automatically balances the signal from one receiver against that obtained from the other, instantaneously selects the best, and feeds it to the d-c keyer circuits and thence to the printer line. Both the receivers and the converter are engineered for unattended continuous duty, and will give long, trouble-free operation with only routine maintenance.

The 709D-1 frequency shift keyer was developed to provide a simple yet dependable unit for adapting existing transmitters to frequency shift operation. For such service it is most commonly coupled to the transmitter through a modified crystal holder inserted in the transmitter's crystal socket.

You will find it well worth while to consult us about your radio printer requirements.

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COLLINS RADIO COMPANY, Cedar Rapids, Iowa

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Fried

Cloud Courier of '27. Boeing 40-A's carried mail and passengers between San Francisco and Chicago for Boeing Air Transport, predecessor company of United Air Lines. Payload was 1,000 pounds and cruising speed 105 miles per hour.

Congratulations **UNITED AIR LINES** **ON YOUR 25th ANNIVERSARY!**



United Air Lines Mainliner Stratocruiser carries 55 passengers, a crew of seven, and 7,000 pounds of cargo. United operates the 71-ton, double-decked planes on 12 weekly round-trip schedules between Los Angeles, San Francisco and Hawaii.



AVIATION PRODUCTS

We take off our hats to United Air Lines—one of our oldest aviation customers who has made good in a mighty big way. In attaining its silver jubilee, United Air Lines has expanded its system of airways from 460 to 13,250 miles. And right from its early days, United has depended on Phillips 66 Aviation Products.

Phillips, a pioneer in the development of high-octane gasolines and special lubricants for airplanes, is one of the nation's largest suppliers of top-grade aviation gasoline for commercial and private planes. In addition, Phillips is supplying tremendous quantities of jet fuels for U. S. military planes. For time-tested, high-octane aviation gasolines . . . for new, higher-powered jet fuels . . . rely on Phillips. The Aviation Department, Phillips Petroleum Company, Bartlesville, Oklahoma.



